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# AMERICAN GAS ENGINEERING JOURNAL

FORMERLY
AMERICAN GAS LIGHT JOURNAL

VOL. CXII., No. 26
WHOLE No. 3251

NEW YORK, SATURDAY, JUNE 26, 1920

Subscription $3 per year
$4 Canada $5 Foreign

"Danger"

This warning has no connection with the lines of cast iron bell and spigot and flanged pipe shown in the picture.

There IS danger, however, to the bank account and tax rate of industries or municipalities using OTHER THAN

Cast Iron Pipe

for conveying water or gas in manufacturing plants, under city streets or along a railway right of way.

Indeed, the economics of investment DEMAND Cast Iron Pipe as the basis upon which securities may be issued, because its use makes initial investments permanent ones.

The Cast Iron Pipe Publicity Bureau
1 Broadway New York

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?

Why Not Sell
That Appliance
Which Benefits

Your Company

As Well As

Your Customers

?

AMERICAN GAS ENGINEERING JOURNAL. June 26, 1920. Vol. CXII, No. 26. Published Weekly by American Gas Light Journal, Inc., New York, N. Y. Subscription Price $3 per Year; $4 Canada; $5 Foreign.
Entered as second-class matter January 9, 1917, at the post-office at New York, N. Y., under the Act of March 3, 1879.

# THE KOPPERS COMPANY

**Designers and Builders of**

**BY-PRODUCT GAS PLANTS**
**BENZOL RECOVERY PLANTS**
**MOTOR FUEL RECOVERY PLANTS**
**AMMONIA RECOVERY APPARATUS**
**TAR DISTILLING PLANTS**
**BY-PRODUCT GAS PRODUCERS**
**GASOLINE ABSORPTION PLANTS**

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**CONSULTING ENGINEERS**
**ON THE OPERATION OF BY-PRODUCT COKE AND GAS PLANTS AND THEIR AUXILIARIES**

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**PROPERTIES EXAMINED**

**ENGINEERING REPORTS**
**FINANCIAL STATEMENTS PREPARED**

**COALS ANALYZED AND TESTED**

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# THE KOPPERS COMPANY

**PITTSBURGH, PA.**

*The* *Established 1851*

# STACEY MANUFACTURING CO.

*Designing and Constructing Engineers*

## GAS HOLDERS

PLATE AND STRUCTURAL METAL WORK

*Bench. Mountings Valves*

*General Cast Iron Work*

GAS PLANT, OIL REFINERY *and* CHEMICAL PLANT EQUIPMENT

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### Machinists, Founders & Contracting Engineers

### Newark, N. J.

*Products*

CHARGING AND DISCHARGING MACHINES:
For through retorts.
COAL GAS BENCHES:
With horizontal retorts.
WOODALL-DUCKHAM SYSTEM:
Of continuous carbonization in vertical retorts.
MACKENZIE EXHAUSTERS:
Arranged for either motor drive or direct connected to vertical steam engines.
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PRIMARY AND SECONDARY CONDENSERS.
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Of cast iron or steel for single, double or triple flow.
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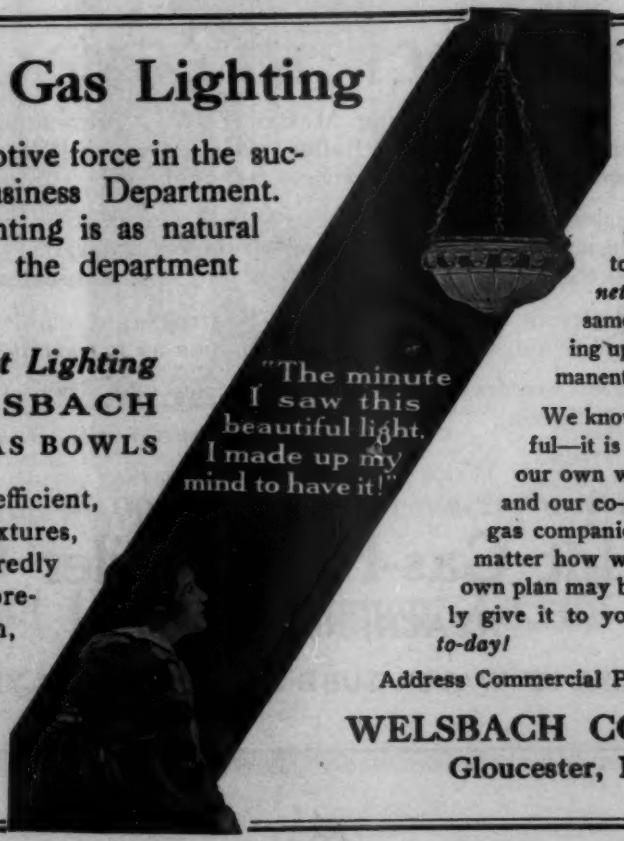
With these new, efficient, beautiful lighting fixtures, gas lighting is assuredly the popular and preferred illumination, and its use is increased among the most desirable class of consumers.

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that will enable you to sell these lights *at a net profit*, while at the same time you are building up a successful and permanent gas lighting business.

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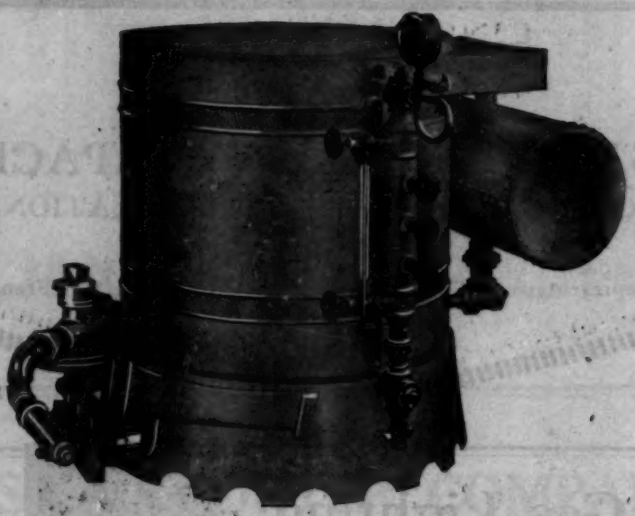
## Gas-Fired Steam Boiler



IS LOWER THAN A STOCK BOILER AND MAY BE PLACED IN ANY OUT-OF-THE-WAY SPACE

ELIMINATES COSTLY TRAPS, PUMPS AND OTHER SIMILAR FEEDING DEVICES

Is specifically adapted for Heating Matrix Tables, Vulcanizing, Laundries, etc., and any place where a High-Pressure Boiler is desired which will operate on a return system on the same floor with the appliance.

The extremely low water level of these boilers makes them convenient to place beside the appliance, and, with one foot drop on the return water, satisfactory results will be had—and all costly Steam Traps, Pumps, etc., are **eliminated.**

This Special Boiler is adapted to Garage Heating as it may be installed on the Garage Floor and does not require a pit in the floor as is usually necessary.

Get after the Newspapers, Tire Shops, Laundries and Garages in your city and sell them an "Ofeldt Special."

Write us for full particulars.

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**MAKERS OF WATER TUBE BOILERS FOR 25 YEARS**

In the

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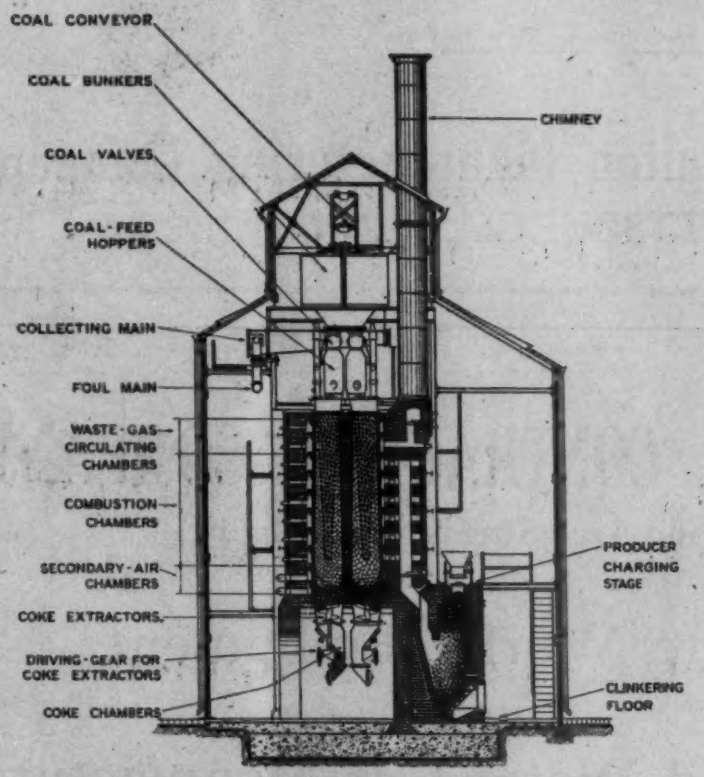
## The Carbonization Process Is Continuous

The coal enters at the top and slowly travels down the length of the retort until finally discharged at the bottom in the form of coke. In passing through the heated retorts the coal becomes thoroughly carbonized, and the coke is extracted by mechanically operated extractors at the base of retort.




Section of a Glover-West Vertical Retort Plant

The retorts are surrounded by superimposed combustion chambers separately heated and controlled. The secondary air supply for the completion of combustion enters and circulates around the base of the retorts, and extracts the heat from the outgoing hot coke. This causes a big economy in fuel consumption, as the residual heat of coke is thus retained in the setting.

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**Is Furnished and Installed by this Company**

## PLUS
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## AUTOMATIC GAS WATER HEATER

# Age

Age is not an asset unless the years have produced a record of accomplishment.

The record of the Ruud Automatic Water Heater begins with the development of Automatic Hot Water supply and covers over a quarter century of successful manufacturing and merchandising.

Successful not only from our point of view but from yours.

Ruud mechanical superiority and Ruud after-sale service mean consumer good-will.

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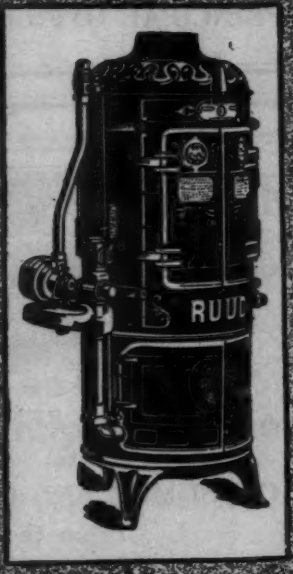
Through a quarter of a century, these things have made Ruud success both for us and for Ruud dealers.

Ruud Sales Momentum is at high speed.

We are as anxious as you are that you share in the increased sales.

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**Light Streets for the protection of property and security, and comfort of the citizens**

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CHARTERED 1854

Mines Situated on the Pennsylvania and the Baltimore and Ohio Railroads, in Westmoreland County, Pa.

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Since the commencement of operations by this Company its well-known Coal has been largely used by the Gas Companies of New England and the Middle States, and its character is established as having no superior in gas-giving qualities, and in freedom from sulphur and other impurities.

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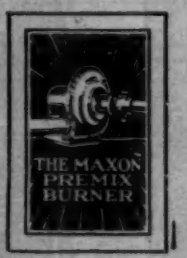


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**to**
**CONSUMER AND CUSTOMER**
**From the**
**CORRECT APPLICATION OF GAS**
**With**
**THE MAXON PREMIX BURNERS**
**on**
**INDUSTRIAL FURNACES**

## MAXON FURNACE & ENGINEERING COMPANY
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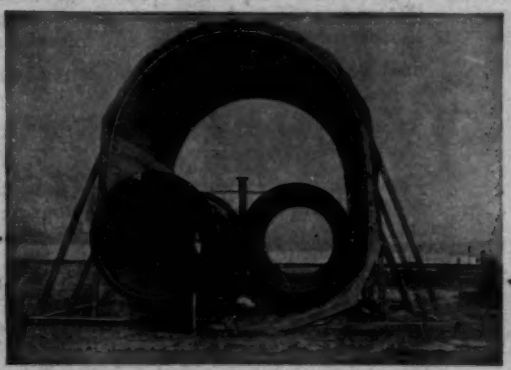

Model of Astoria Tunnel with 72-inch Gas Pipe in Place

## U. S. CAST IRON GAS PIPE
**In the Astoria Tunnel**

Two lines of "The Pipe That Outlasts The Ages" were laid side by side as shown in the picture.

Cast Iron pipe has a record of 250 years of excellent service. The first length of cast iron pipe ever made is still in use. The first piece of cast iron pipe ever laid in this country is still in use.

Don't overlook these facts when deciding upon the pipe for your next extensions or new gas mains.

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## CLEVELAND, OHIO

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**By-Product Gas Oven Plants**

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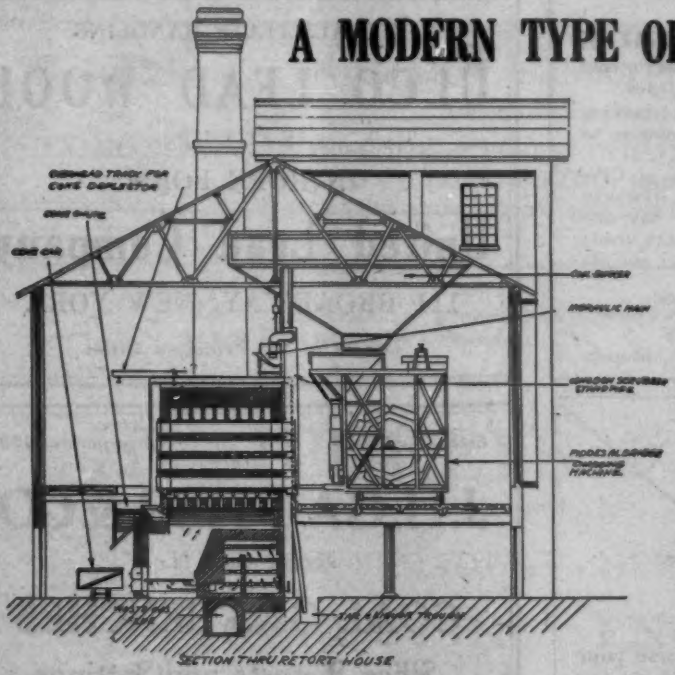


**with preheated primary air fitted with**

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**Fiddes-Aldridge Charging and Discharging Machine**

***Builders of Complete Coal Carbonizing Plants.***

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**Coal Gas Benches—Gas Works Apparatus**
COMPLETE COAL CARBONIZATION PLANTS

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Are you satisfied with your purification results? We make our oxide from clean cast iron borings, pine shavings and lime, just as you would make it for your own use.
LET US SOLVE YOUR PURIFICATION TROUBLES
**GAS PURIFYING MATERIALS CO.**
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If you judge by years of service then you will decide that
**DIXON'S SILICA-GRAPHITE PAINT**
is the paint you should buy. The lowest price per gallon is the highest per year. A quality paint like Dixon's that has been making long service records for over 50 years, and is made in First Quality only, means economical service at low cost. Write for booklet No. 231-B and convincing records.
Made in Jersey City, N. J., by the
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Established 1827

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IRON SPONGE
Gas Purifying Material
GOVERNORS
1. Station — Automatic, Balance
2. District — Liquid Seal, High Pressure, Intermediate Pressure, Low Pressure
3. Retort House
4. Fuel Gas or Coke Oven
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6. Service — Liquid Seal, High Pressure, Intermediate Pressure, Low Pressure
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Has acquired the Gas Apparatus and Process Patents of L. P. Lowe, E. C. Jones and L. B. Jones
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For many years EVERY gas company in California, Oregon, Nevada, Arizona and the Hawaiian Islands, and in several other localities, has distributed highly satisfactory commercial gas made EXCLUSIVELY from low-grade crude oil and its residuums.
Oils of High Sulphur Content Used Successfully.
Literature of These Improved Oil Gas Processes on Request.
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**ULCO LEAD WOOL**
IS PUT UP
IN ROPE FORM
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*Offices in All Principal Cities*

**294**
**IRON HYDROXIDE**
USERS IN ALL PARTS OF THE UNITED STATES
The engineers of 294 gas works endorse your decision to use IRON HYDROXIDE for gas purification, for its service record is unequalled.
**IRON HYDROXIDE COMPANY**
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**COAL GAS BENCHES**
Silica Retorts and Settings
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"WESTERN"

P. & A. Tar Extractors have
many useful features

BULLETIN 201-G

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ADVICE AS TO CONSTRUCTION *and* MANAGEMENT

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CONSULTING ENGINEERS

ARTIFICIAL GAS
NATURAL GAS

ELECTRICITY
OPERATORS

CONSTRUCTORS
APPRAISERS

# HABIT AND CONTRACT

are the only two things that put this card on this page week after week.

We buy this space by the year.

And the audience wants the "homely stuff."

Want to see what "Old Hook 'er" has "on his mind this week."

"Orders?"

Did you say "orders"?

Why, bless your heart, do you suppose we have any trouble with orders when we can give a man what we do in Ridgway Elevators, as follows:

1. Virtually costless to run
2. Absolutely Fool Proof
3. No Repairs
4. No Counterweight
5. Goes at any speed
6. Always goes
7. Goes when Engine shuts down
8. Stops accurately at floors

**NO PAY UNTIL IT MAKES GOOD**

That is some guarantee, isn't it?

Sounds like the "Hot Air" of a salesman, doesn't it?

And so you just laff and jog along—and "sting" your poor old Boss with the kind of Elevators he has always (c-as-d), excuse me—used,

While 3000 and more Real Big Concerns with Real Engineers—behold here a sample of them—are yelling for more and more Ridgway Elevators—

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| Penna. R.R. | Am. Hard Rubber Co. | Lukens Steel Co. |
| N. Y. Central R.R. | U. S. Rubber Co. | Congoleum Co. |
| New York World | B. F. Goodrich Co. | Chicago Mill & Lumber Co. |
| Diamond Match Co. | Midvale Steel Co. | |
| Am. Smelting & Rfng. Co. | American Pulley Co. | Swift & Co. |
| Strd. Underg'nd Cable Co | Lowell Bleachery | Remington Arms & Am. Co. |
| Gen'l Refractories Co. | Merrimac Chem. Co. | |
| Michelin Tire Co. | | Spanish River Paper Co. |

We often wonder how the "DEAD ONES" can hold their jobs.

They sort a bluff it through, we guess.

But we should worry, when we are almost swamped with orders from the biggest and best in the land who are crazy to

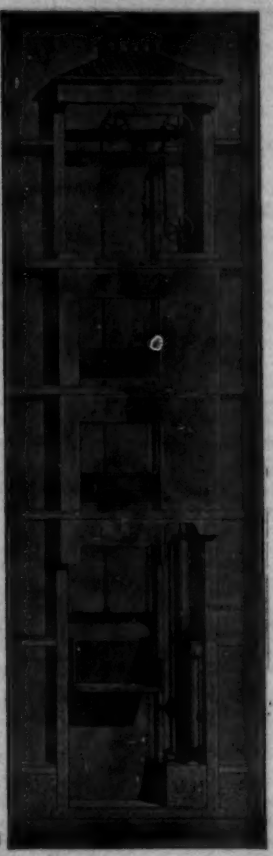
***"Hook 'er to the Biler"***

**CRAIG RIDGWAY & SONS, Coatesville, Pa.**
ELEVATOR MAKERS TO FOLKS WHO KNOW

Direct Acting

**Over 2000 in Daily Use**

Double Geared



# FLANGE END VALVES

We can furnish Valves for working pressures up to 1200 lbs. per sq. in.

***Send for Circular 5***

# The LUDLOW
## VALVE MANUFACTURING COMPANY
## TROY, N. Y.

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| New York 82 Gold Street | Boston Oliver Building | Philadelphia Harrison Building |
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# GAS HOLDERS
## STEEL TANKS

WATER OIL SPECIAL

# PLATE WORK

BUNKERS HOPPERS STACKS
FLUES CANALS SPECIAL

## STRUCTURAL STEEL

TOWERS TRUSSES SPECIAL

## WE ERECT EVERYWHERE

*Prompt Delivery Assured By Large Stock Constantly Replenished*

## Cruse-Kemper Co., Ambler, Pa.

*Engineers—Contractors—Manufacturers*

Cable: Cruskemper Ambler, Western Union Code

ESTABLISHED 1842 BUILDERS OF INCORPORATED 1908

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39 Laurel Street, Philadelphia, Pa.

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400 CHESTNUT STREET, PHILADELPHIA

Manufacturers of

**Cast Iron Pipe**

HEAVY LOAM CASTINGS

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LAMP POSTS, VALVES, ETC.

*Gas Power Plants with Producers*

Builders of

**Gasholders**

Single or Multiple Lifts, with or without Metal Tanks

**Purifiers Condensers**
**Scrubbers Bench Work**

*Cutler's Patent Freezing Preventer for Holder Cups*

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WESTMORELAND
GAS
COAL

The uniformity and quality are backed by the service of our organization.

*We mine—we ship—we serve.*

## The Berwind White Coal Mining Company

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General Agent and Manager
Gas Coal Department

No. 1 Broadway, New York City
AND
Commercial Trust Bldg., Philadelphia

# THE BARTLETT HAYWARD CO.

**Founders and Engineers**

Main Office and Works
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PRODUCTS:
Complete Plants for Coal and Water Gas, Coal Gas By-products, Cane and Beet Sugar;
Special Equipment for Gas and By-Product Plants;
Special Gas Cleaning Apparatus;
White and Middleton Gas Engines.

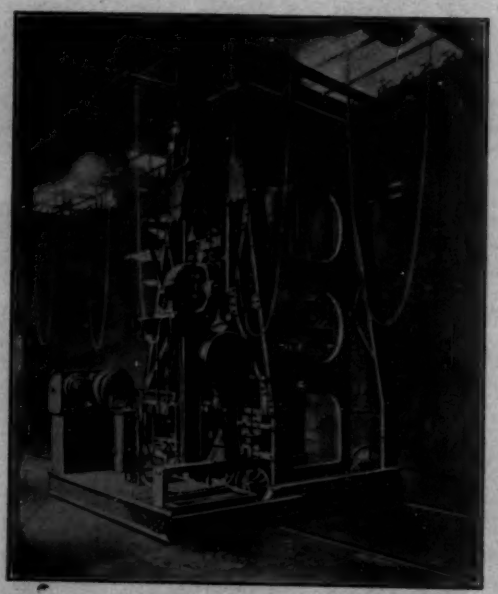
GAS MANUFACTURING PLANTS:
We design and build complete plants for the manufacture of
Coal Gas,
Carburetted Water Gas,
Blue Water Gas,
as well as special equipment for plants of any size
DeBrouwer Retort Charging and Discharging Machines,
Hot Coke Conveyors,
Condensers,
Tar Extractors,
Scrubbers,
Purifier Boxes,
Feld Type Vertical Centrifugal Scrubbers,
Gas Holders,
Steel Tanks,
Waste Heat Boilers,
Coke Screening Plants.

SPECIAL GAS CLEANING APPARATUS:
We design and build special apparatus for cleaning the gas from
Blast Furnaces,
Gas Producers
Lime Kilns.

CANE AND BEET SUGAR FACTORIES:
Multiple Effect Evaporators,
Vacuum Pans,
Crystallizers.

WHITE & MIDDLETON GAS ENGINES:
Horizontal Type — 5 to 50 H.P.,

BY-PRODUCT PLANTS:
We design and build complete plants for the manufacture of
Concentrated Ammonia,
Aqua Ammonia,
Ammonia Sulphate,
and for the recovery of
Tar,
Cyanogen,
Benzol and other products;
as well as special apparatus for the
Production of Ammonium Sulphate without the use of Sulphuric Acid.
Manufacture of Potassium Ferrocyanide and Sodium Ferrocyanide



BHCo.-DE BROUWER TYPE CHARGING MACHINES

Built for Horizontal Through Retorts up to 22 Feet long and for capacities up to 500 Tons per 24 Hours. Machine weighs each charge accurately and lays charge uniformly and automatically.

***Write for Information***

American
Gas Engineering Journal

FORMERLY THE AMERICAN GAS LIGHT JOURNAL

Vol. CXII, No. 26 NEW YORK, JUNE 26, 1920 Whole No. 3251

# Estimating the Consumption of the Domestic and Industrial Fields

## Law of Averages Almost as Free from Error as in Life Insurance Business—Factors that Throw the Demand Out of Balance and How They May Be Corrected

By L. W. ALWYN-SCHMIDT

One of the great problems of gas engineering, met practically in the instant of every new installation, is that of estimating approximately the quantity of consumption that can be expected from the new field, so that the size of the plant may be adjusted to conditions. To have built a plant far in excess of the actual market requirements of the district is only a little less discomforting than to find out that the plant is below requirements, and that in consequence a great deal of business has to be turned away, possibly never to return. Taking into consideration the great importance of the gas industry for the conservation of national resources, we may expect an increasing demand for gas service in many communities during the next few years. Anyhow this tendency should be encouraged as much as possible and the problem of capacity will arise very frequently.

The usual means, now employed, in all such cases is that of engaging an expert who will make some sort of an estimate. This estimate in ninety out of a hundred cases will be correct, but the man himself will confess readily enough that luck has favored him in most instances and further that he follows more his intuition than real reasoning. He makes, in fact, a guess, based upon the operation of a subconscious sense, that leads him to the proper solution of the problem. But what is the operation of this subconscious sense of estimating? No doubt it must work according to certain rules.

### Like Law of Averages in Life Insurance

Insurance statisticians know that there is no such a thing as coincidence in the operation of the law of averages. Of ten thousand men every single one must die as a certainty. One-half may die when they have passed the age of fifty. Thirty per cent will die possibly before that age and the rest will grow older. Just give an insurance statistician a sufficient number of cases to operate on and his averages will come out as an absolute certainty. The same rules that affect insurance statistics, and in fact all other average statistics, affect the consumption of gas in any distribution field. A well-known gas expert once said to me, that I might take him blindfolded in any house in his distribution district, show him the accommodation of the flat and tell him the number of people that live in it, and he will make out a gas bill for them that will be fair to either party. The fact is, that domestic gas consumption runs extremely evenly in similar neighborhoods.

You take a city of fifty thousand inhabitants and compare it with any other of the same size and offering approximately the same conditions and the domestic consumption of gas per head of the population will be practically the same. This applies not only to whole cities. It applies in New York, for instance, to individual apartment houses.

Take Washington Heights. There are to be found in that district a great many apartment houses of the old walk-up type of five stories each and four families to the floor. These houses are inhabited by a comparatively well off middle class which, while it does not spend recklessly, has enough to live decently. Cooking is still done mostly at home in these apartments and in consequence gas consumption runs principally through the kitchen stove.

House for house these buildings differ very little in gas consumption and if an average would be made for statistical purposes, it would show most likely that they are representative of many other houses of the same character all over New York. One might very well imagine a gas man walking through the streets of upper New York and estimating house by house the approximate consumption of the district.

The same applies to the district where individual dwellings dominate. As an example, the upper Bronx region might be selected. Here are conditions very similar to those in many of our smaller cities, where apartment houses intermix with private dwellings. The consumption capacity in the case of the individual dwellings is mostly governed by the number of inhabitants in each house and the number of rooms.

Take a district that has no gas but is of the same composition as the upper Bronx. Supply it with gas connection and make arrangements for the cheap installation of gas equipment inside the buildings and you will find that inside a couple of years the gas consumption of that district will come up to the standard of the Bronx domestic capacity.

### Gas Financing Safe Enterprise

This consideration makes gas financing a rather safe undertaking. It is, therefore, peculiar that capital has not employed this investment more often than it does at the present time. The whole problem really centers around the question of supply of capital.

If capital is large enough to supply not only the generating and distribution equipment, but assist also greatly in the installation of the consumption equipment, there is no risk whatever in any new undertaking, and the approximate consumption can be figured more closely than the approximate sale of any other industrial product.

This explains probably the subconscious intelligence for estimating possessed by many gas experts. If the experiment would have to be brought down to paper it would run approximately as follows:

Find out the character of buildings, number of inhabitants, approximate wealth of the new district. Make a test in various cities offering approximately the same conditions and base your final estimate on the comparative result. All that is left then is to provide a gas plant of sufficient size and get the consuming equipment into the buildings. How satisfactorily such a procedure is may be seen best by the excellent results that have followed gas development practically everywhere where a gas plant was supplied for a ready-made city. Here were given a number of dwellings, each fittedd with a gas range in the kitchen of nearly the same capacity and each house had a fair average of tenants. The gas plant working in that settlement could not but receive the business from the tenants.

In the old world several gas enterprises have been founded upon this principle.

A survey was made of the whole city as to its requirements in meters, kitchen ranges and other equipment. The plant was built and the pipes laid to connect the houses. Then work began seriously.

No attempt was made to gain individual customers by canvassing, but the gas works simply offered to install the equipment free of charge in every building, together with a pay-as-you-go meter.

Very few householders will object under such circumstances and it will take not long before the ranges and meters are installed in at least 90 per cent of the distributing field.

Consumption in such a case then takes care of itself. If the gas works later felt that they could make better use of their capital than to lock it up in kitchen ranges in private use, they offer to the householders the purchase of the stoves and employment of a time meter with somewhat lower consumption rates than those for the slot meter.

The slot meters in this case can be slowly replaced by other meters and the money received from the sale of the kitchen ranges can be applied for other purposes. Naturally the price of the gas has to be estimated in the first instance, so that it will pay both for the main installation and for the capital investment for the supplementary consumption equipment. But the example is entirely sound financially and can be applied wherever there is the desire of building a gas plant.

### More Attention Should Be Given to Statistical Analysis

We are living just now in a time, when the employment of gas installation in private houses becomes more of a necessity than a convenience. The supply of gas is independent of labor troubles and transportation difficulties.

Gas will come to the house at any time of the day, no coal cellar is required for its storage, nor is there any waiting for the coal man.

Some cities, therefore, will be ready enough to hear proposals from gas companies for the erection of gas plants, and the method suggested above is one that should recommend itself both to the investors as well as to the municipalities. It seems, therefore, that the problem of estimating domestic demand should find some more attention than it has found in the past. Gas companies should co-operate by making available their domestic consumption figures so that they may be used for the purpose of comparison. This would necessitate a better analysis of the consumption reports of the existing gas companies on the basis of checking up individual accounts.

The method also will have many special advantages for the gas company. It happens only too often that the consumption of whole districts begins suddenly to decline. A district may deteriorate as regards the population. A number of good restaurants in the neighborhood may induce whole households to give up home cooking and transfer their trade to the restaurants.

But there is also a chance of the equipment not coming up any more to modern standards. There is the case, for instance, of a member of older apartment houses that are losing rapidly on gas consumption for the very simple reason that the landlords are not inclined to replace the existing ranges with new ones while the gas company will do so only against a payment by the tenant. The result is that electric cooking is resorted to for the minor meals as breakfast in many instances, or that people find it more convenient to eat out.

Waiving a matter of $2 for an installation fee or whatever the cost might be for putting new stoves up in these dwellings would immediately correct the situation and increase the consumption.

Estimating the probable industrial gas consumption of a district is considerably more complicated than the job of estimating private consumption. The reason is that there is no sort of basis upon which the estimate might be made.

The American census authorities while having given much attention to the question of electrical power generation have hardly taken notice of the gas engine, grouping together so varied machine units as internal combustion engines heated with gasoline, oil, gas and other materials. It was pointed out already in the course of this article that the use of gas is not only a matter of convenience but may become one of public policy. To have, therefore, on hand data for the rate of employment of the gas engine would be of considerable importance. It is too late to-day to urge inclusion of

(*Continued on page* 510.)

# Public Interest Demands That Eight Million Dollars Be Spent in Gas Company Betterments and Improvements in Next Two Years in Indiana Alone

## Paul P. Haynes, Utility Commissioner, Sees Clearly the Public Responsibility in Providing Such Conditions That Utilities May Be Able to Finance the Work

If the public of Indiana is to be protected adequately by its public service corporations the next twenty-four months should and must see a total expenditure of $88,000,000 for imperative improvements and betterments. Of this vast amount the gas utilities of the State alone need immediately $8,000,000. These figures were made public at Warsaw, Ind., June 16, by Paul P. Haynes, member of the Public Service Commission of Indiana, in an address before an annual convention of telephone men there. The figures, and other parts of Mr. Haynes' address startled the people of Indiana, and brought home to the hundreds of thousands of utility product consumers in the State the dire situation that confronts their public service organizations. Gas experts throughout the State when they read the report, confirmed Mr. Haynes' statements and the speech already has become the backbone of discussion of the Hoosier utility problems in many civic and official quarters.

### Public's Responsibility Clearly Defined

"The public interest demands that these improvements be made," Mr. Haynes said, after he had given his audience the figures which the Public Service Commission has accumulated from actual data on the subject. "The industrial, commercial and social life of all communities demand them. But these millions cannot be expended unless the corporations are able to obtain them. They must be able to show financial houses, from which the money is to be obtained, that the businesses into which the millions are going, are in solvent, healthy and profitable conditions."

### Indiana's Needs but a "Drop in the Bucket"

Mr. Haynes pointed out that the Indiana situation is but a drop in the bucket when the gas, water, electric, street railway and telephone needs of the country as a whole are taken into consideration.

"I contend that the first and most important step in the solution of this great problem is that the utilities of the country must teach the public to know that it is a partner in this vast enterprise," he said, "a partner who inevitably must suffer the losses and enjoy the prosperity of companies that dedicate themselves to the public service. Public confidence in utility corporations must be restored. This confidence can only be restored by the establishment of proper public relations, and this means open and aboveboard practices by the utility. But more than all this, confidence will come from the rendering of good service."

Mr. Haynes spoke on the subject of "State Commission Control." His address, of deep interest to the general public in Indiana and other States, as well as to the gas fraternity, follows:

"For three years the utilities of the country have been facing continuing crises. Most of us have been optimists. We have believed that to-morrow would give us a price reaction and lighten the burdens which are being carried by companies engaged in public service. But prices have continued to climb and burdens have accumulated.

"The solution of the critical problems which this situation continues to precipitate has troubled the minds not only of the owners and operators of utility properties, but even as completely has it vexed the men, who are charged with the duty of regulating and controlling them.

### Risk of Frenzied and Outraged Public Sentiment

"Loose thinking operators have said, 'Why, this is a simple situation. If the public service commissions will grant us all we ask, whenever we ask it, our troubles will end.' I dare say, if such a policy had been followed during the past three years by the commissions of the country, that the whole system of regulation would at this moment be engaged in a losing struggle against a frenzied and outraged public sentiment. The utilities would find themselves hurled back to the old destructive system of political intrigue and bargaining, councilmanic corruption and ruthless competition.

"The same disastrous results doubtless would have been duplicated if the opposite policy had been adopted—a policy which finds its best expression in a few municipal officials who, with great acclaim before their constituents, demand that regardless of everything, rates be reduced to prewar levels and the utilities made to bear the tremendous increases in operating costs.

"Contending with these two extremes the public service commissions of the country are endeavoring to solve the utility problem, with fairness and equity to all. It is a difficult task, for, on the one hand, many honest and sincere people, having little information and less understanding, firmly believe that regulatory bodies are controlled by the corporate interests, while on the other hand, a few unreasoning

and dissatisfied operators believe that a majority of the members of regulatory bodies are members of the Bolsheviki, and listen only to the howl of the mob and whose only purpose is to destroy invested capital. It is difficult for either of these groups of individuals to believe that the public service commissions of the country have been striving conscientiously to perform a most unpopular task with the single purpose of approximating justice to all.

"It is my conviction that there has been entirely too much wailing on the part of utilities and entirely too little constructive effort along educational lines. We all know that the public has a common interest with the utility; that there is a natural and rightful reciprocal and mutual relationship between the producer and consumer of the utility product. In most instances, however, this relationship and mutuality of interest has been ignored or forgotten. On the one hand, utility operators in many instances have conceived that the public was the natural enemy of all utility enterprises, and on the other hand, the public has believed that every utility was a soulless corporation extending its tentacles everywhere to rob the public.

"Before public regulation of utilities can be successful, in a large way, both the utility and the public must be brought to a clearer understanding and fuller appreciation of the common interest that exists between them.

"How important it is that at this moment there should be a complete and harmonious appreciation of the mutual interest of the public and the utility in their common problems.

### Need of Piping Gas to Thousands of Homes

"Recent announcements of the Census Bureau disclose remarkable increases in the population of many cities throughout the land. There is hardly a city anywhere but that needs substantial additions to its water works system, to its gas system and other utility properties. Thousands upon thousands of new homes have been built, and to these homes pipes must be laid to carry water and gas, and poles must be erected and wires must be strung to carry electricity and to give telephone service. Tracks must be built and rails must be laid to carry men to and from their work. These things are not luxuries, they are vital necessities, and in some instances necessities upon which the very life of the community may depend.

"The public interest demands that these improvements be made. The industrial, commercial and social life of all communities demand them. The health and well-being of citizens depend upon them. But such improvements can only be made by the expenditure of millions upon millions of dollars. These millions of dollars cannot be expended unless the corporations are able to secure them. The corporations cannot secure them unless they are able to show the financial houses from which they must be secured, that the business into which these millions are going is a solvent, healthy and profitable business. The business of utilities cannot be solvent, healthy and profitable unless the public safeguards and protects the utility by the payment of adequate rates.

"In order to protect the public and to give the public vitally needed utility service there should be expended in the State of Indiana during the next twenty-four months the sum of $88,000,000 for additions and extensions.

"Practically every utility would prefer to expend no money during these months. They would prefer that their capital investment be not increased during the present critical times. But the public interest demands that $88,000,000 be expended in order to serve the needs of the public. The $88,000,000 which should be expended in Indiana during the next two years is divided between the various utilities as follows:

| | |
|---|---|
| Gas | $8,000,000 |
| Electric Lighting | 15,000,000 |
| City Street Railways | 17,000,000 |
| Interurbans | 32,700,000 |
| Water | 3,300,000 |
| Telephone | 12,000,000 |
| Total | $88,000,000 |

"How, how is this vast sum of money to be raised?

"Every one knows that during the past ten years utility securities have dropped from a position of preference among security purchasers to a position of ill-favor. Where utility securities are now purchased, they are in most instances taken by institutions and individuals in order to protect previous investments.

### Watered Element Not Only Sufferer

"The credit of utilities generally is inspired to the point where only by the greatest difficulty can funds be secured. Go to the banker of any town or city and ask him if he will lend the money of his bank on the promissory note of a local utility. I dare say that only in rare cases will a utility be so fortunate. In many cases money cannot be borrowed on bonds, and when it is so borrowed, it must be accepted at such a high interest rate and such excessive discount must be suffered as to make unwise the expenditure which the loan is intended to cover.

"Now what has been said does not apply alone to the watered utility, whose bonds and stocks greatly exceed the value of the property, but this unfortunate condition applies with almost equal force to utilities that are soundly financed and whose aggregate securities are even less than the value of the property.

"This precarious situation in which the utilities find themselves not only forbids the securing of vast sums of money for needed additions and extensions, but presages an era of economic disturbance which unless stopped may invite general disaster throughout the land.

"Therefore, we face not only the immediate problem of raising $88,000,000 for investment in utility enterprises in Indiana and hundreds upon hundreds of millions of dollars for similar enterprises throughout the country, but we face the much more vital problem of maintaining the solvency of utility enterprises everywhere.h

"I contend that the first and most important step in the solution of this great problem is that the utilities of the country must teach the public to know that it is a partner in this vast enterprise—a partner

that inevitably must suffer the losses and enjoy the prosperity of companies that dedicate themselves to the public service. Public confidence in utility corporations must be restored. This confidence can only be restored by the establishment of proper public relations, and this means open and aboveboard practices by the utility. But more than all this, confidence will come from the rendering of good service. The utility that convinces the public that it is honestly and conscientiously striving to give the best service possible and is frank and open in its public relations will find in most instances a liberal response on the part of the public. 'Service first' should be the watchword of every public service company. If due to conditions beyond the control of the company, it is unable to give adequate service, still the public will respond liberally if it has been taught to know that the company is honestly and conscientiously doing everything within its power to give the best possible service. This is not an idealistic academic conclusion, for I have personal knowledge of many instances where the public has responded without stint when it was taught to know that the utility was striving to be a real public servant. In one instance where a public utility corporation had been the subject of abuse and where for a period of years it had been in disrepute, it came before the public open and aboveboard and told its troubles and asked the public to be patient and said, 'We'll break our back if necessary to render good service,' there was almost an immediate response on the part of the public. The opposition was stilled and a general feeling of sympathy was developed.

"This is typical. I do not mean to say that the rule will always work, but it has been my experience after hearing hundreds of cases that it is the only rule that will bring the public to a real appreciation of its copartnership in utility enterprises.

NOT ENOUGH MERELY TO PERMIT A UTILITY TO EXIST

"In emphasizing the need for proper public relations and good service as being the first essentials to a rehabilitation of the credit and welfare of public service companies, I do not mean to imply that public service commissions escape their responsibility for maintaining the solvency of utilities. I may add that it is not only the duty of regulatory bodies to maintain the solvency of these enterprises, but it is their bounden duty to see to it that the utilities which they regulate are not only solvent, but are healthy and profitable. It is not enough merely to let a utility exist, but it should have a compensation which will reflect itself in prosperous operation, good financial credit, healthy growth and good service. Furthermore, the utility that renders the best service and shows a deeper regard for its obligations as an agency of the public service should be liberally rewarded, just as the utility that renders poor service and has little regard for public obligations should be restricted in its reward.

"Public service commissions of the country may be depended upon to maintain the financial stability of utility enterprises throughout the land. They understand their responsibilities and have the courage to do their part in maintaining the economic well-being of the nation. They understand, perhaps more than others, the real need for a deeper understanding and appreciation of the copartnership which exists between utility enterprises and the public, and they realize their impotency to act when the public service corporation fails in its obligations adequately to serve."

## Drawing Liners from Gas Engine Cylinders

In the ordinary types of internal-combustion engines, and these include gas, oil and petrol, the cylinder liner is almost invariably held in position by means of tee-headed bolts set in lugs cast on the outside of the liner body and passing out through the back end of the combustion chamber, a method which renders the matter of liner withdrawal and subsequent reassembling comparatively easy.

Such provision is, however, often lacking in the smaller size engines, the liner being forced into a slightly taper seating at the front end of the cylinder, or otherwise provided with a groove in the facing part which takes a round rubber ring, the back end being an abutting fit against a flat machined face and jointed with an asbestos ring. Obviously the removal of such a liner for reboring or other like purposes may on occasions be attended with considerable difficulty, inasmuch as the means at the disposal of the mechanic are extremely limited, there being no opportunity permitted of driving or forcing from the back end, or of attaching anything thereto in the form of a drawing bolt from the front.

A pair of wrought-iron clips are made a fair fit to the outside of the liner and bolted together tightly thereon. If these fit snugly all round there need be no danger of crushing the liner; but if bearing only, say, at top and bottom, a hard wood bridepiece might be forced into the mouth of the liner in order to counteract the pressure applied. Bolts are then passed through the two lug holes and nutted on the outside, the ends of the bolts projecting sufficiently to bear against the clips. Pressure is now applied by tightening the nuts on the two bolts, which exerts a thrusting influence upon the liner, thus drawing it from its seating.

## Fuel for Gas Producers

Theoretically, any substance which is fairly rich in carbon can be utilized as fuel in gas producers, provided always that it is possible to raise the mass of the fuel to a red heat and to keep it at that temperature by means of a current of air. One of the best fuels for this purpose is anthracite white coal or coke. But wood chippings, shavings and sawdust are also capable of yielding a good quality gas if they are burned in the generator of a gas producer, and one firm of furniture manufacturers where the sawdust is used to produce gas, the gas thus obtained being utilized to drive gas engines, which in their turn drive electric generators, the current from which drives the various woodworking machines. Another substance which can be economically employed is straw. In the vast agricultural areas of western Canada it is estimated that 20,000,000 tons of straw go to waste every year, and yet this is capable of being successfully employed in small plants to produce gas for lighting and power purposes on the farm. This should lead to a considerable development in the use of power in agriculture and thus assist in the more economical development of that great and important industry. Other substances could be mentioned, but sufficient has been said to show that there are many materials which are at present wasted or disposed of for next to nothing which could be economically employed in the generation of power.

# Holds When It Cannot Be Done—It Can't Be Done

## Individual Citizen Knows Full Well When He Hasn't the Money to Pay the Bill He Must Cut His Needs to Fit His Purse—Then Why the Strenuous Objection When the Gas Company Is Unable to Accomplish More?

One of the most important decisions yet rendered in a public utility case was the verdict given in favor of Kings County Lighting Company, Brooklyn, by Referee Herbert T. Ketcham, recently. The verdict came in a mandamus action started by the Public Service Commission of the First District, New York, to compel the gas company to take on additional consumers, despite the protest of the Kings County Lighting Company that it did not have the facilities to care for this extra business and that it could not finance these extensions and improvements under its inadequate rate.

In announcing that he would dismiss the case against the company the referee stated: "I will find that the lighting company has not the money or the immediate assets available belonging to it, nor the resources by which it can borrow money to comply with the order and that they have not now a plant which is adequate for the work that would be required by compliance. Case dismissed."

The fullsignificance of the decision can best be gained when it is taken into consideration the fact that the Kings County Lighting Company announced on March 8, 1920, that it would be impossible to make any additions to its existing mains, setting forth as the reason the fact that it could not finance these extensions. Furthermore, it was pointed out that no relief was in sight and there was no likelihood that there would be any change in the situation.

So carefully was the situation handled, however, that politicians and other self-seekers who planned to gain a great personal victory, were amazed when the public rallied to the support of the company. Numerous statements were issued to the press in which it was stated that the gas company would be forced to take on any and all who might apply, regardless of the consequence. Backed by public opinion the company resisted these attacks and merged from the first engagement with a victory to its credit.

One of the first acts that ensued was that the Public Service Commission held a hearing investigating the conditions. Before the inquiry was completed an order was issued requiring the company to take on all consumers.

To prove its good faith in the matter, although it continued its warning, the Kings County Lighting Company attempted as best it might to comply with the order. But conditions quickly proved that its contention was right and the Public Service Commission then took the only possible step, that of suing out a writ of mandamus.

The Supreme Court of New York State, however, was not satisfied to take up the action in a perfunctory manner and the referee was appointed. Exhaustive hearings were held, consumers were heard and the company records produced. But at the conclusion of the hearing the Public Service Commission attorneys were forced to admit that they could not combat the testimony of the company and the referee then announced his findings.

Those who are familiar with public utility conditions throughout the country hail the action of the company and the resultant court decision as establishing a precedent that will be far-reaching in effect. It means, according to those who know, that a public utility can defend any action that might be started and which would prove confiscatory in its effect. It also points a way for companies to prove rate litigation without however interfering in the orderly presentation of such other facts as might have bearing on the case. Could any evidence be stronger than a court decision having bearing on the matter then up for adjudication?

Commenting on the decision Ralph Elsman, vice-president of the Kings County Lighting Company, had this to say:

"I have always contended that no commission or court could compel us to do the impossible and it is only by bringing the story home to the people that there can be any result in rate litigation. I feel that the action of the referee has confirmed my judgment in every particular.

"I feel that the spirit of American fair play has prevailed in this case as it is bound to do in all cases eventually. It has constantly been my argument that justice will win out in the end. As I have repeatedly stated to our consumers, if the company is right and fair and just, it should and will win, but that if it is dishonest in any particular it will be defeated and it does not deserve to win. It has been on this basis that I have builded our entire campaign and the result of it is already beginning to show, particularly in this case.

"But the public which greeted the announcement as a victory was not won over to support the company by mere words. For the past three years, it has been my policy to accord fair treatment in every case and we have backed this treatment up with a campaign of education.

"Those companies which are starting to-day in their educational campaign will face much the same difficulties that my company had to overcome with this important exception: the public has been educated to intelligently read newspapers and periodicals and they also follow through to its logical conclusion any campaign which vitally affects public welfare. Newspapers, too, facing increased costs in their own business are willing to concede that public utilities also are experiencing abnormal costs, and newspapers are fair enough to present all sides of a story, except in a few isolated cases where their policies are so biased and unjust that they defeat their own ends and are without influence on the thinking people of a community, who after all is said and done are the real leaders of any movement despite the apparent preponderance of the other class, which after all practically is inarticulate in expressing its wants. This latter group, moreover, is led by those who are animated in their actions by a desire to build for the greater good. These then are the men and women who must be reached and that we have been successful in reaching them is shown, I believe, by the verdict just recorded."

# Gas Sales Association of New England Holds Annual Meeting

**H. J. Pettingell, Jr., Elected Governor for Ensuing Year—Interesting Paper on Gas Ranges Read by Walter K. Stafford—Charles W. Person Explains Method and Plans of Advertising Section of A. G. A.**

The annual meeting of the Gas Sales Association of New England was held at the Boston City Club, May 7, at 6.30 o'clock. William Gould presided.

After the supper, the governor opened the meeting with the following remarks:

"I have great pleasure in addressing you to-night for two reasons. The first being that Mr. Person of the advertising section of the American Gas Association has come from New York to tell you of the work in his department. The second reason is that Mr. Walter K. Stafford of the Weir Stove Company is to read a very interesting paper on the Gas Range. There is still another thing that makes this meeting of special interest to me and that is because it is the last time that I shall preside as governor.

"Mr. Person needs no introduction to you. His talk will be full of points which you can all heed and utilize to your considerable advantage.

Charles W. Person—Mr. Governor and Gentlemen: I am glad of this opportunity to appear before so active a body of gas men and to tell you as briefly and pointedly as possible some of the things that the publicity and advertising section of the American Gas Association is doing, and likewise, some of the things that you as gas salesmen can do for this section.

We are all interested in the subject of publicity and the benefits to be derived from it, whether we are aware of the fact or not. This meeting in itself is a form of publicity, for are we not gathered here for the purpose of exchanging ideas and disseminating knowledge? Aside from the mere social pleasure of getting together now and then for an informal discussion of the gas business, the real motive that impels us to attend these meetings is the fact that we obtain something of definite value from them in the way of a mutual give and take of sales ideas.

The publicity and advertising section of the American Gas Association is coming in closer contact with other sections of the association, especially the commercial and manufacturers' sections. This is only natural, for publicity is so closely interwoven with sales and merchandising plans that one, to be successful, cannot get along without the other. Our program for the first year takes this fact into consideration and we shall endeavor just as soon as our publicity plans are in a more advanced stage than they are at the present time, to lend advertising assistance to the various companies through the preparation of folders, literature and various other advertising matter.

Before we can hope to do this with any measure of success, we must know from you and your companies what methods you are pursuing in selling your merchandise and appliances. If the past year has been a bumper year for you we want to know all about it, so that we can pass the information on to someone else who has not been so successful and who therefore needs just such assistance. A noted editor said recently that the day was happily past when the possessor of a money-making merchandising plan could stick his head in the sand like an ostrich and refuse to tell the other fellow about it. "The other fellow will hear about it all right," said he, "and will improve upon it. Nobody has a corner on ideas these days."

Let me say that the policy at headquarters is "to tell the other fellow," and you men who have the ideas, the experience, and the cold, hard facts in your heads, should send these facts along to headquarters so that we can pass them on. If you have made good in the field during the past year, tell us about it. If you have sold more ranges in your territory than you ever anticipated, tell us how you did it. "There is a reason," as they say, and we want to give this reason publicity through the American Gas Association monthly and later, when we get actually on the job, through a special bulletin or leaflet service that will be full of sales enthusiasm.

As working units in the gas industry we cannot be more prosperous than the industry itself. A chain is no stronger than any one of its links, and if you are a strong link in the merchandising chain you can make the other links stronger by co-operating with them in the very simple and effective way of telling them what you know.

You are no doubt familiar with the excellent publications issued by a number of big manufacturing concerns to their salesmen in the field. The purpose of all such publications is to create enthusiasm through the spreading of selling ideas that have been put to the test and have worked. We want to do something like this for the gas industry, but it is a considerable undertaking and before you can start it you must get the thousands of gas salesmen and their managers into the habit of feeding into headquarters their best selling ideas.

The publicity and advertising section is becoming more and more to be a clearing house of information for the entire industry. We want to make it a clearing house also of

selling and merchandising ideas and plans and campaigns. When you get into the habit of sending this sort of information to us we will have ample material to publish our contemplated salesmen's or sales-manager's bulletin and there will be enough left over to fill a few pages in the monthly and to serve us in good need for preparing advertisements for our member companies.

Start the habit now. In other words, let us know what you know. We will pass it on to the other fellow and in the end we will all benefit thereby.

William Gould—I suggest that we appoint a committee to co-operate with the advertising section of the American Gas Association.

Mr. Woodhead of Arlington made a motion to that effect which was seconded by many and passed unanimously.

The governor then appointed Mr. A. A. Higgins, of Providence, chairman of such a committee with power to appoint to the committee as many members as he deemed advisable.

Mr. Stafford then read his paper as follows:

"Mr. Governor and Gentlemen: My topic for this evening is "The Gas Range as a Winter Sales Proposition"—the sales of gas stoves as well as the sales of gas therefrom during the cold weather months, and it is a very important subject for the consideration of the gas trade at this time.

"Until the past year or so, I believe, there has never been any real effort put forth to solve the problem before us to-night: the boosting of gas sales from gas stoves during the cold months of the year.

"For years previously such an undertaking was generally regarded as an impossibility. Few gas companies looked for or expected business at such a time of the year; much less was there any disposition to go after it. Such a thing would have been considered as ridiculous as the recent efforts to communicate with the planet Mars, and if we will stop to consider past conditions we will easily understand why such an idea should have prevailed.

"We all know how slow the people were to take to the gas range when it was first introduced, and what a long educational process was necessary before it really began to be used to any extent. The people were about as afraid to handle one of those early stoves as we would be to-day to handle a stick of dynamite, and they were a long time getting over it. Another thing that made it difficult to do much with them was the very high price of gas which made the gas range practically prohibitive except to those able to afford such a luxury, and the stove itself was an expensive thing to buy in those days.

"With the gradual reduction in the price of gas as well as gas stoves, the latter came more and more into use, and increasingly so as the gas companies offered inducements in the way of easy terms. Many of them installed stoves at less than cost. All kinds of schemes were resorted to to increase their use and with most successful results.

"One of the strongest arguments used in selling a stove was that it did not heat the kitchen like a coal stove in summer, and consequently it was more comfortable to work in. No particular attention was given to the use of gas stoves during the cold months; in fact, little use for it was expected at that time of the year.

"Up to quite recent years it was quite a common thing when selling a bill of stoves to be told to ship them along May 1, or even later, and when you called around again in July you would be told that the stove business was over for the year, that the hot season had begun, the people had gone into the country, and that all who wished to buy had made their purchases. So that the sales of gas stoves were often limited to but a few months of the year. If there was so little faith in being able to get summer business, is it any wonder that winter business was considered negligible?

"We must remember that the gas company of the time of which we are speaking was a very different institution from what it is to-day, and whether merited or not, public sentiment was very much against it. It was considered as little better than a thief or a robber, and was treated accordingly, but with the changed attitude of the gas company toward the public, and with its more conciliatory methods, all has been changed. The once ferocious and disgruntled complaint clerk gave place to one more polite, tactful and patient, and with similar efforts in other departments to appease the people it finally succeeded in overcoming all antagonism, and in bringing about much more friendly relations, so that the gas men can get what he wants to-day as never before. He has the confidence and the ear of the public, and I believe that nearly everywhere the best of feeling now exists. I know of no other industry that has been so successful in thus winning over the public.

"The gas company of the old school, if we may so term it, did not employ any regular stove or appliance salesman, but whoever in the office found it most convenient to go out and wait on a consumer would do so and often in a most indifferent and uninterested manner, and with evident annoyance at being interrupted in his work.

"Is it any wonder that under such conditions, particularly where there lacked any knowledge about gas stoves, that sales were so few? How different it all is to-day. Now, in every properly conducted gas appliance department, there is a salesman to greet the customer and show him every attention, with intelligence and courtesy. The salesman understands his business, and the result is that the customer is pleased with his treatment as well as with his purchase.

"Courtesy is one of the greatest things in the work, and in recent years its importance has been impressed on employees in all lines of business. Some years ago, I remember seeing cards hanging on the walls of the office of one of our large New England gas companies for the benefit of its employees. It is wise counsel, for it costs nothing and brings much to any business or individual. Courtesy cannot be cultivated too much.

"Just here I want to side-step and say a few words about what I consider a great need with the gas trade at this time. That is the instruction of salesmen and fitters about gas stoves and other appliances, so that they will be qualified to take care of many of the complaints. In the great majority of cases it is merely a matter of simple adjustment, and they would be unnecessary were the stoves or other appliances properly adjusted when installed. While this is a simple matter to one who knows how, it is not so with one who does not, and there are many such in the employ of gas companies at this time as a result of the war and other conditions. By instructing these men you will not only benefit them, but yourselves and the public, for the greater the number of complaints the greater the number of dissatisfied customers, which all goes to hurt the gas company as well as the sales

(*Continued on page* 519.)

# American Gas Engineering Journal

SIXTY-FIRST YEAR

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## As the Journal Views It

### Is There a To-morrow?

Is there a gas man who believes the trying period through which the industry is going is to end on the junk pile?

Is it conceivable that rate adjustments will be delayed too long to prevent wholesale bankruptcy and disorganization?

Is it possible that because it cannot get oil at a practical price gas making will become a lost art?

Not one man in a thousand, and that one is probably a stoker, cherishes such a belief for a moment. It is too utterly absurd. There is need for gas, a constantly mounting need. And so long as that exists there must be gas producing facilities.

It may be that there is hard sledding still ahead for us, but inevitably there must be a to-morrow. And for the man or industry who has not prepared for them to-morrows loom up as ominous possibilities.

The to-morrow we in the gas industry have to look forward to is one of enormous demand and tremendously enlarged responsibilities. And we are not preparing for it.

We are affording as good an imitation of being dead as anyone from whose body the last breath has not passed could possibly hope to afford.

We take no interest in selling gas because we are losing money on that we are already selling.

We dodge away from talk of enlargements and improvements because in our present status the cost of new money and the difficulties in the way of attracting it are greater than they ever have been before.

We are oblivious to the fact that there is a to-

morrow because, apparently, we are lacking in the courage to stomach the obvious necessities of the present day.

Utility financiers know how much money has already been poured out to tide over a period of high costs and public apathy. But for the sake of a few millions more we must hazard are we to let hundreds of millions of dollars' worth of good-will go to seed?

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## Under the Circumstances Lack of Real Effort Amounts to a Plain Dereliction of Duty

A reading of the daily newspapers is enough to convince one that any householder who desires to insure that his family will be comfortable next winter and guarded against sickness would do well to install about his home at least several gas space heaters if not a central gas-fired heating plant.

If gas rates were generally what they should be, such step might not be one of economy, based alone on primary fuel costs, but it would be one of obvious common sense.

Perhaps some householders will get their full quota of coal. But some will fall short. And the difficulty is no one knows just which will be the unfortunate.

It is a gas man's duty to advise his people as to such matters. If he fails from lack of interest, from lack of desire to sell more gas at a losing rate or from lack of conviction as to the desirability of a large seasonal heating load, his failure is in fact a plain dereliction of duty.

Looking at the matter as we once would have looked at it, when rates were more or less what they should be when gas oil cost a little less than what sugar cost then instead of almost as much as sugar costs now, when our principal perplexity as to coal was dodging the importunities of rival salesmen rather than anxiously combing the country for one with a few tons to sell, the gas industry would have viewed the present situation as a wonderful opportunity.

Beginning to-morrow, with the public's well-founded anxiety as to coal supply as a selling wedge, we could put gas heating appliances into consumer's premises as fast as the available reputable manufacturers could deliver them to us.

An opportunity lies before the gas industry to reap in limitless volumes the public's good-will and appreciation; to impress upon it imperishably that while other seeming certainties may fail the gas supply never fails. And, incidentally, to reap a very welcome profit on gas appliances sold.

## Handicapped by Incompetent Help

It is advantageous to have on one's payroll a high caliber executive.

But a good part of the advantage is lost if he is handicapped by cheap and incompetent help.

A weak point common to many companies is having the many efforts of a high-priced executive hampered by the errors of a low-priced stenographer.

The loss to the company is not fully covered by the time he consumes in penciling incorrectly transcribed dictation and sending it back for rewriting. There is an irritation and disturbance of the mind as an upshoot of the incident that reacts upon and impairs the executive's other efforts.

The same applies to other kinds of assistance. It is, of course, to be expected that the subordinate must be taught. But there is nothing so disturbing to the teacher's enthusiasm and vim as an utter inability on the pupil's part to learn.

Few executives will be drawn upon to the point of impairment of efficiency if he has a few assistants in the learning stage. But if there are too many he will soon become discouraged and drawn upon to the point where his own value to the company is forever gone.

We owe it to ourselves to provide our companies with high-caliber executives. No less do we owe it to ourselves to see to it that these are provided with high-grade help. The executive is but a unit in the organization. We cannot expect him to be the whole works.

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## Estimating the Consumption of the Domestic and Industrial Field

(*Continued from page* 502.)

this very interesting subject into the census of 1920, but it would be highly desirable if a special feature would be made of it during the next census. Also there might be a possibility of extracting some sort of information from the present census reports that could be made available to the public.

### Estimating Industrial Gas Consumption

The usual means of estimating industrial power consumption for any district is also that of comparison. Averages are obtained for the usual power consumption in certain industries, which is then used for making the estimate. But the employment of any sort of power in any district is always dependent upon the cost.

In the instance of a district, for instance, employing mixed power generated either by steam, internal combustion or electricity, it would be interesting to find out beforehand at what cost approximately the gas company would be able to supply power to the consumer.

Gasoline is rising continually in cost, having now nearly doubled its prewar value, and electricity also cannot be supplied as cheaply, while the price of coal is increasing continually by the rising cost of mining and transportation.

The private steam power plant is in this respect

situated just as inconveniently as the electrical central station or the gas company. The saving that either of these means of power production can produce, therefore, depends rather in the means provided for distribution and application.

Considering the enormous cost of steam power generation and the practical inability of adjusting the power plant always exactly to the real needs of an enterprise, gas and electricity offer certain distinct advantages. The expert, estimating the probable industrial consumption for the gas industry, therefore, might assume with certainty that he can get fifty per cent of the steam business in a district if the company is willing to go for that business with all force. The principle to work upon in this case is that of cost of coal storage, lack of economy in steam generation, and cleanliness. It needs no saying that any system of gas heating under a boiler is more economical than coal heating, quite apart from the economic loss caused by ordinary coal combustion.

This has the advantage that the old boiler equipment can be used and that the change can be made nearly instantaneously when once the customer can be persuaded to see the advantage. Small steam plants can be often replaced very early by gas engines, because the saving in the latter is very great against the steam plant in the instance of smaller units.

The case is not as easy with reference to electromotors. The electromotor offers certain undeniable conveniences, including those of supplying power to individual machine units that can be cut off whenever the unit is not required. But what applies to steam generation in the factory applies just as much to that in the electrical central station. Gas firing would mean in fact a very extensive reduction in the cost of electricity production.

The simplest way to deal with the probable industrial gas consumption, therefore, seems to be in any case to reserve a certain surplus of capacity for industrial purposes and to go immediately for the most promising consumers in the district with a view to secure the connection. Thirty per cent of the estimated possible business should be obtained easily, and if a 50 per cent capacity is provided for the estimate should come as near as can be to the actual requirements.

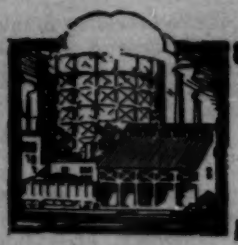
This still leaves out the problem of possible growth. Leaving aside the purely residential districts our gas companies have had the experience that industrial consumption and private consumption, if once firmly established in the field, rises approximately at the same ratio. The reason is that when new industries are developed in the district these industries invariably attract also new population. If the development in consequence is anything like normal the gas company will always have a certain increase in the domestic consumption to go with the industrial consumption. In Europe it is very easy to estimate this annual increase several years ahead because cities have a tendency to grow more normally than is the case with American cities. The average American city is liable to take a sudden jump in population and industrial development which throws out of gear all scientific estimating.

On a National basis, however, it would be very easy to estimate the total likely increase of gas consumption during every year by the simple means of basing it on the increase of population. This system of estimating may be modified with reference to given localities by estimating a couple of years ahead upon the basis of former growth, in which case it will be necessary to take into consideration the likely growth in general economic activity caused by the appearance of the gas works in such cases where a new field is entered.

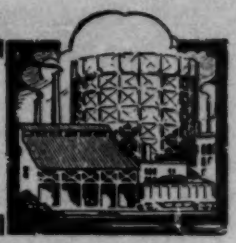
## Propagation of Flame

*Air and Methane.*—The duration of the uniform movement of flame, set up initially when a mixture is ignited at the open end of a horizontal glass tube closed at the other, is controlled by the factors which influence the establishment of resonance in the column of gases in the tube—speed of flame, and length, diameter and uniformity of bore of the tube. With mixtures containing between 10 and 10.5 per cent of methane, and with a brass tube 240 cm. long and 5 cm. in diameter, the speed of flame during the uniform movement was 90 cm. per second over a distance of 80 cm. The amplitude of the vibrations increased gradually at first and then more rapidly, the mean speed of the flame falling to 64 cm. per second. Eventually the "vibratory movement," which owes its origin to an undulation of abnormal amplitude, was established. During the forward motion of the flame during the vibratory movement a speed of 2,430 cm. per second was attained, but the maximum mean speed of flame over a certain section of the tube was 278 cm. per second. When ignition takes place at the closed end of a horizontal tube, open at the other, no uniform movement takes place, but the speed of the flame increases rapidly as it travels toward the open end. The speed of flame in some of the mixtures reached 29 m. per second over the last ½ m. of the tube. In longer and wider tubes the flame was extinguished during violent vibrations after the flame had traveled 10 m. The extinction was caused by the contraction of the gases behind the flame dragging the flame back and mixing unburnt gas with the products of combustion. With the tube opened at both ends no such extinction was noted, the flame accelerating in speed as it passed along the tube. This is the condition which would lead to the most disastrous results in industry; for although the initial speed of the flame is not then so great as when ignition is at a closed end, continued propagation is assured, and there may be developed momentarily during the vibratory movement velocities and pressures as great as any produced throughout the life of a flame started at the closed end.

*In Complex-Gaseous Mixtures.*—The mixture of hydrogen and air for complete combustion—that is, the mixture having the greatest heat of combustion—contains 29.6 per cent of hydrogen, but the mixture is observed with all inflammable gases when mixed with air, including gases, such as carbon monoxide, the thermal conductivities of which are less than that of air. The speed of propagation of flame during the uniform movement depends mainly upon the rate of conduction of heat from layer to layer of the mixture, which in turn varies according to the difference in temperature of the burning and the unburnt gases and to their thermal conductivities, and upon the rate of reaction between the combining gases, which for a given combustible gas will vary with the composition of the mixtures, according to the usual laws of mass action and with the temperature of the reaction. The rate of reaction appears to be the determining factor in the position of the maximum speed mixture, the displacement being shown to be due to the influence of mass action upon the rate, this not having its maximum effect in the mixture with the great calorific value.



# NEWS OF THE GAS INDUSTRY



## Consolidated Gas Co. of Baltimore Asks Permission to Lower B.t.u. Standard

The Consolidated Gas, Electric Light & Power Company of Baltimore has asked permission to lower the minimum gas standard from 530 B.t.u. to 500 B.t.u. The petition will be brought before the Public Service Commission in the form of a hearing.

The case will involve two questions: the first, whether or not the commission will permit the lowering of the gas requirements, and secondly, what reduction, if any, will be made in the price, should the reduction be made.

The gas company has presented no suggestion of a decrease in gas rates in the event that its request is granted. On the other hand, it has set forth in its petition the fact that other Eastern cities have increased the rates. It apparently looks upon the lowering of the B.t.u. requirements as a means to maintain present rates rather than lower them.

Under the present regulations of the commission the gas company is required to furnish gas with an average of 550 B.t.u., the minimum being set at 530 and the maximum at 570. The gas company offers to maintain the stipulated average, but asks that the period for which the average is shown shall be a year. The object of this is to permit the furnishing of gas of about 500 B.t.u. during the summer months, with a higher quality during the winter season, to bring up the general average.

The explanation of this lies in the decreased consumption of gas during the warmer weather and the increased supply of coke gas from the ovens at Sparrows Point. The Bethlehem Steel Company is now furnishing the gas company with approximately 20,000,000 cu. ft. of gas a day, which nearly equals the total output. In a short time it is expected that the still further decreased demand will make it possible to fully meet the demand with the Sparrows Point supply.

This coke gas is of about 500 B.t.u. The required average has been maintained by the addition of carbureted water gas. If the company is to make full use of the coke gas there will be no necessity for adding manufactured gas, as there will be an ample supply without it. Hence the petition. Not to use the coke gas, says the gas company, is to cause an economic waste.

During the winter season, when the consumption of gas is in excess of the Sparrows Point supply, the gas company is compelled to augment its capacity with the manufactured product. As this water gas is of higher heating quality, its addition quite naturally raises the average in B.t.u., so that during a 12-month period it is quite possible to bring the final average up to the 550 requirement.

A point is made of the fact that the oil from which the manufactured gas is made is difficult to obtain and then only at a price that has increased 500 per cent. since the present rates were made. Permission to use the coke gas would eliminate this expense for the next few months and has given rise to the question of whether or not a lower rate might not be in order. The position of the gas company is that the saving effected now will be offset later, when it will be necessary to use the gas oil at the high price demanded for it.

## Asks Permission to Sell Bonds

The Los Angeles Gas & Electric Corporation, Los Angeles, Cal., has filed with the railroad commission application for permission to sell bonds to the amount of $126,000 at not less than 90, to reimburse its treasury for expenditures for additions and improvements to its plants in Los Angeles and Pasadena.

## A. G. A. Appeals to Attorney-General Palmer for Reduction in Coal Exports

In connection with efforts now being made at Washington, D. C., by Department of Justice and Interstate Commerce Commission officials to relieve freight congestion on the principal railroad trunk lines, thus expediting the movement of coal, the American Gas Association has filed with Attorney-General Palmer a protest against the present heavy coal exports, and an appeal that the Attorney-General exercise all authority at his command to bring about an immediate reduction in the volume of coal now being exported.

An embargo on coal exports is being given serious consideration by representatives of the Interstate Commerce Commission and the Department of Justice as the only remaining means of remedying to any appreciable extent the coal shortage now so seriously affecting gas companies throughout the United States, as well as other lines of industry.

The American Gas Association's appeal to Attorney-General Palmer reads as follows:

"The American Gas Association appeals to you to exercise whatever authority may be vested in your office to bring about an immediate reduction in the volume of coal now being exported beyond the limits of the United States and its possessions. A similar appeal has been made to the President of the United States by formal resolution which fully explains the urgency of the situation from the standpoint of gas companies endeavoring to maintain an indispensable service to forty-five million people in the United States.

"The alarming conditions which now so generally prevail in the matter of the coal supply are of the gravest concern to the gas industry of this country. Few gas companies are able to do more than obtain an amount of coal necessary for immediate operations. It is impossible, therefore, for them to accumulate a

reserve supply to carry them through the period of reduced transportation that is to be expected with the coming of winter. Approximately forty-five million people are dependent directly or indirectly upon a continuous gas service for the preparation of their food and other vital domestic purposes. It is needless to point out the widespread suffering that must inevitably result from any curtailment in the supply of gas to the general public.

"The American Gas Association recognizes to the full extent that European countries are in a large measure dependent upon the United States for coal, and that suffering will ensue if this source of supply be closed. But acute conditions which have come upon us threaten even greater suffering to our own people unless all possible measures are made use of to bring about a stable condition in the coal supply and provide shipment of coal in quantities sufficient not only for immediate needs in the case of gas companies but sufficient to allow an accumulation of a reserve supply necessary to enable these companies to continue their indispensable public service through the coming winter."

## Deficit After Dividends

The operating revenues of fifty-nine companies reporting to the Massachusetts Department of Public Utilities, show for the fiscal year ended June 30, 1919, an increase of about 20 per cent, or $24,425,785, against $20,650,987 in 1918. Expenses were similarly increased, totaling $20,495,820 compared with $16,979,031 in previous year.

The fifty-nine companies showed a deficit of $570,325 after dividends and all fixed charges. The 1918 deficit was $517,656. But only eight of the companies are failing to meet dividend requirements.

## Gasoline Output of Columbia Gas & Electric

Total gasoline output of Columbia Gas & Electric, Huntington, W. Va., and subsidiaries this year to June 4 was 7,587,371 gal., compared with 7,255,400 gal. a year ago, an increase of 4.6 per cent. Output for the week ended June 4 was 211,411 gal., compared with 284,026 a year ago.

## N. J. Towns Oppose Plan to Establish Oil Differential

If the New Jersey Public Utilities Commission grants the application of the Public Service Gas Company of Newark, N. J., for permission to establish an oil differential in its gas rate contracts, consumers will have to pay $1.35 per 1,000 cu. ft. of gas, instead of $1.15, the flat rate now being charged under an order of the commission made last October. The rate of $1.35 per 1,000 cu. ft. is based on the present price of oil, about 12 cents a gallon. If oil goes higher, as experts predicted at the hearing in Newark, the gas rate will jump at the rate of three cents a 1,000 cu. ft. for every cent of increase in the cost of oil per gallon.

The oil differential, which would cause gas rates to increase or decrease as the price of oil fluctuated, was opposed by representatives of the Township of Wallington, in Passaic County; the town of West Orange and the city of Plainfield. All urged that the gas company ask a flat increase in the gas rate rather than resort to the differential.

Percy Young, vice-president of the Public Service Gas Company, in charge of finances, testified that the company was now operating under a contract for oil at 5.18 cents per gallon, but that this contract expires in August, and that the company had been unable to get a new contract. The company must get a contract, he said, as it would be impossible to operate by buying oil in the open market from month to month.

Mr. Young said there was no indication of a fall in oil prices, but that the price might go higher. No matter how low oil went, the price of gas would not be lowered under $1.15 except by a new order of the utility commission.

## Merger of Public Utilities

The Pennsylvania Public Service Commission has approved the consolidation and merger of the following companies: The Lehigh Valley Light & Power Company, the Northern Central Gas Company, the Columbia & Montour Electric Company, the Northumberland County Gas & Electric Company, the Harwood Electric Company, the Schuylkill Gas & Electric Company, the Pennsylvania Power & Light Company (old company) and the Pennsylvania Company.

All the companies except the Pennsylvania Lighting Company entering into the merger were controlled by the Lehigh Power Securities Corporation. The latter company will control the Pennsylvania Power & Light Company through ownership of all its common stock, except the directors' shares and all its non-cumulative preferred stock.

The merger was effected in order adequately to protect and insure the continuity of and satisfactorily to meet the growing demand for service and to provide capital with which to procure additional facilities for supplying this service.

The Pennsylvania Power & Light Company will operate in an extensive territory in Pennsylvania, including the Allentown-Bethlehem-Northampton-Slatington industrial section, one of the most active, prosperous and densely populated districts of the State. It will supply gas service to fourteen cities and towns, including one served at wholesale, and electric service to ninety communities, including thirteen served at wholesale.

## Natural Gas Conservation Body Adopts Comprehensive Program

A comprehensive and definite program for conservation of natural gas and prolongation of this great natural resource in the United States through the promotion of economic and efficient methods to be applied to its production, transmission and utilization was unanimously adopted at a meeting of the National Committee on Natural Gas Conservation June 11 in the auditorium of the Interior Department Building. Members of the committee and representatives of public utility commissions, as well as governors' delegates from natural-gas-using States, participated in discussion of tentative resolutions, based on reports and recommendations of the subcommittees, which were formulated and taken under advisement at the committee's last sessions in Pittsburgh on April 30.

Secretary of the Interior Payne welcomed the delegates and in a brief address declared their purpose of meeting a most commendable one, saying that the United States had been a most wasteful nation, with

its abundant natural resources, and that the time had surely come for conservation and economy. The Interior Department, he said, with its corps of trained experts, stands always ready, willing and anxious to aid and assist the public and the industries in devising ways and means of solution of their problems.

Dr. Frederick G. Cottrell, succeeding Van H. Manning as Director of the Bureau of Mines and chairman of the committee, addressed the meeting on the various phases of the natural gas problem, the keynote of which seems to be the question of advisability of increasing the supply of gas available for domestic use at the expense of prohibiting its use by industrial plants. In this connection he cited the carbon black industry as the largest consumer of natural gas. He pointed out that the work of the National Gas Committee can be only educative, as it is not endowed with police powers to enforce its recommendations. That must be done by the individual States concerned. As to which character of consumer should be permitted to use natural gas and who should be forbidden to use it, Dr. Cottrell said that must be decided by the various public utilities commissions in natural-gas-using and natural-gas-producing States, where restrictive regulations should be issued according to the particular conditions prevailing in the respective localities. The same would apply to the elimination of waste at the wells and in the homes, in the latter case by change of burners and other equipment calculated to increase the efficiency of a given amount of gas.

J. O. Lewis, chief petroleum technologist and natural gas expert of the Bureau of Mines, read the resolutions as they were tentatively adopted at the Pittsburgh meeting, adding one which was drawn up by the committee in private conference just before Friday's meeting, providing that natural gas companies submit statements to the State public utilities commissions covering the free consumer situation and utilization conditions in the field and along the companies' main lines.

The resolutions, as finally adopted on formal motion of Mr. Lewis, of West Virginia, are of immense interest to every producer and consumer of natural gas in the United States as officially recommended ways and means toward improvement of natural gas service and prolongation of its supply by elimination of heretofore prolific waste through use of modern equipment and other conservation measures, and as a basis for public utilities commissioners' regulations along these lines.

## Gas Company Must Continue to Operate

The California Railroad Commission will not permit the Imperial Valley Gas Company, El Centro, Cal., to suspend operations stated Commissioner Brundidge at a hearing of a petition filed by C. E. Paris, receiver for the company. The commission took the matter under advisement, after hearing testimony submitted by the receiver and many consumers, but gave public expression that the plant would be kept in operation. A suggestion on the part of the consumers that an increase in rates would be temporarily acceptable was taken in consideration by the commissioner and will probably be acted upon favorably.

## Gas Corporation Stops Sale of Coke and Bengas

Due to the scarcity of gas coal and gas materials in general the Gas & Electric Corporation, Rochester, N. Y., has stopped the sale of both coke and Bengas. The corporation had but five days' supply of coal on hand. An order has been placed for twenty-five cars of gas coal, but under the abnormal conditions there is no certainty of its arrival. The corporation has appealed to consumers to economize on the use of gas. A further hearing will be held in Albany June 29 before the Public Service Commission on the question of reducing heat units in gas. President R. M. Searle of the corporation will attend.

## Directors Re-elected

At the annual meeting of the stockholders of the Cincinnati Gas Transportation Company, Cincinnati, Ohio, the following directors were elected: W. W. Freeman, H. W. Lothmann, M. E. Moch, Chas. P. Taft and Charles F. Windisch. The directors organized by electing H. W. Lothmann president; Chas. F. Windisch, vice-president; M. E. Moch, treasurer, and Theo. Clauss, secretary.

## Increased Gas Rates for Eau Claire

Under the new gas rates as revised by the State Railroad Commission gas consumers in Eau Claire, Wis., will pay 20 cents more per 1,000 cu. ft. of gas than under existing rates.

The new rates were fixed by the commission on the application of the Wisconsin-Minnesota Light & Power Company, filed last fall, when a considerable increase in rates was asked. The new rates per 1,000 cu. ft., which will go into effect on the next meter reading, are as follows:

| | Gross | Net |
|---|---|---|
| First 2,000 cu. ft..... | $1.90 | $1.80 |
| First 3,000 cu. ft..... | 1.80 | 1.70 |
| First 5,000 cu. ft..... | 1.70 | 1.60 |
| First 20,000 cu. ft.... | 1.55 | 1.45 |
| Over 30,000 cu. ft.... | 1.45 | 1.38 |

In the return of the Railroad Commission giving the rates summaries of the various valuations placed upon the local gas plant exclusive of the working capital, going value and cost of financing by agents of the interests involved were given. Two valuations were submitted by the agent of the Wisconsin-Minnesota Light & Power Company, one based on prices of May 1, 1919, which was $615,423, and the other based on the average prices for the past five years, which was $47,894.

The valuation placed upon the plant by the city's expert was $313,056, while that of the railroad commission's was a little higher, $338,957.

The railroad commission, basing its action on its investigation and deductions drawn, placed the valuation at $335,000, which is $17,000 higher than the valuation set by the city's expert, but $260,000 lower than the maximum valuation placed upon the plant by the company's expert and $117,000 less than his minimum valuation.

## $10,000,000 Bond Issue

The Guaranty Trust Company of New York has been appointed trustee under the Ohio Cities Gas Company, Cleveland, Ohio, trust agreement, dated June 1, 1920, securing an authorized issue of $10,000,000, par value 7 per cent convertible serial gold notes, dated June 1, 1920.

# Organization and Plans of the Joint Committee on Efficiency and Economy of Gas of the Railroad Commission of the State of California

## Investigations to Be Conducted at Santa Barbara and San Jose to Determine Proper Calorific Value of Gas for Domestic Distribution

The most pertinent question before the gas fraternity to-day is the proper calorific value at which gas is to be distributed. This issue has been of growing concern, both in this country and in Europe, since fuel conservation became the order of the day. There has been more or less expression of opinion and some individual investigations made as to the proper quality of gas to produce for domestic distribution. But nothing in the way of a complete investigation into all of the controlling features has been accomplished.

The subject was one of general discussion at the twenty-sixth annual convention of the Pacific Coast Gas Association, held in September, 1919. It was the consensus of the convention that a committee of its membership be appointed for the purpose of thoroughly investigating the situation. President A. B. Day, acting on the resolution adopted at this convention, appointed a committee of the members to be known as the B.t.u. Content Committee. The personnel of this committee consists of the following: F. S. Wade, chairman; E. C. Jones, J. T. Creighton, F. J. Schafer, L. M. Klauber, C. B. Babcock and D. J. Young.

As the subject matter was considered of such vital importance to the industry, it was deemed advisable, before taking any action, to consult with the gas engineering department of the Railroad Commission of the State of California. The result of the conference with this body was to organize a committee, under the jurisdiction of the commission, to be known as the Joint Committee on Efficiency and Economy of Gas of the Railroad Commission of the State of California.

The committee as organized is representative of the Railroad Commission of the State of California and the public utilities engaged in the manufacture and sale of gas in California, and also the Pacific Coast Gas Association, representing interests of the gas industry at large. The general committee consists of the foremost gas engineers of California, and is organized as follows: L. S. Ready, assistant chief engineer, Railroad Commission, chairman; G. S. Jacobs, engineer, Railroad Commission, Treasurer; H. L. Masser, engineer, Railroad Commission, secretary; and the Pacific Gas & Electric Company, represented by W. S. Yard and W. M. Henderson; Los Angeles Gas & Electric Company, A. B. Day and J. T. Creighton; Southern California Gas Company, F. J. Schafer and B. G. Williams; Southern Counties Gas Company, F. S. Wade and F. C. Champion; San Diego Construction, Gas & Electric Company, L. M. Klauber; Western States Gas & Electric Company, J. E. Kelley, and the Pacific Coast Gas Association, represented by F. S. Wade and C. B. Babcock.

It is the purpose of this body to make a thorough investigation on the subject of the efficiency and economy of gas production, transmission, distribution and utilization.

It must be remembered that gas in California and on the Pacific Coast is made exclusively from crude oil or its distillates, and so the value of the results of the investigation on production will be limited to the Pacific Coast. But as the gas produced by this method is in all respects comparable with domestic gas produced by other methods, the investigation on distribution and utilization will be of actual value to the industry as a whole.

On Jan. 16 of this year the committee assembled for a preliminary survey of the situation and for the purpose of organizing. A full discussion of the subject was indulged in, with the result that a general outline of the work to be undertaken was decided on. As the investigation will cover the field so exhaustively with field operators and investigators, the question of finances was a matter of importance. This has been worked out on a basis of assessment. The public utilities engaged in the sale of gas in the State of California will contribute to a fund for the purpose a percentage of their gross revenue. In this manner sufficient funds can be realized without difficulty. The cost of the work is difficult to estimate, but as outlined now it will require fully two years to cover the program and possibly cost about $25,000 per year. If it can be accomplished for this sum, the results, if they settle the question, will be well worth the expenditure as well as the time.

Chairman L. S. Ready organized the committee into a working force by appointing subcommittees, the chairmen of which are as follows: Test Committee, F. S. Wade chairman; Program and General Organization, W. S. Yard chairman; Publicity, W. M. Henderson chairman; Finance, L. M. Klauber chairman; Progress, A. B. Day chairman.

During the early months of the year the Test Committee and the Program and General Organization Committee have been working out a plan for conducting the work. At two subsequent meetings of the General Committee the reports were thoroughly reviewed and a definite plan for action adopted.

The program is a very comprehensive one. Nothing so extensive has heretofore been attempted in investigating the production and utilization of gas on the scope proposed.

Two gas works have been placed at the disposal of the committee—the San Jose works of the Pacific Gas & Electric Company, with an output of 30,000,000 cu. ft. per month, serving 10,000 gas consumers, and the Santa Barbara gas works of the Southern Counties Gas Company, with an output of about 20,000,000 cu. ft. of gas a month, serving about 6,000 gas consumers. Both these plants produce oil gas but use different processes of manufacturing. The work of the committee will determine the relative value or efficiency of the two methods. Distribution at San Jose is low pressure exclusively; at Santa Barbara it is low pressure and high pressure. This as well offers an opportunity for investigating the two systems.

The tests are to be divided into periods. The duration of each will be determined by results, but will possibly cover at least four months, each period to represent a quality of gas—first, the present practice, 570 B.t.u. quality of gas, as provided by the orders of the California Railroad Commission; next, 525 B.t.u.,

and a third test at 480 B.t.u. It is possible that a lower standard will be observed if the results of the first tests warrant it.

A complete record of plant observations will be made during the period of each test. Each plant will be placed in identical operating condition, and the same rules govern the observations during the period of the tests. This will permit a proper comparison of results obtained at the plants, both as to comparison of plants as well as efficiency of operation under the various B.t.u. standards.

The Test Committee's program in this respect in general is as follows:

### I—Tests to Determine Manufacturing Efficiency

*General.*—To be made at San Jose and Santa Barbara gas plants under conditions as similar as possible. Three series of tests shall be run at each plant with a minimum actual test duration of four months for each, the first test to manufacture gas having an average of 570 B.t.u., the second test 525 B.t.u. and the third test 480 B.t.u.

*Preliminary.*—Before beginning a given series of tests each plant must be put in normal good operating condition. The brickwork in generators should be in average condition—neither quite new, nor old and shattered. Water supply should be normal, circulating pumps in good condition, lampblack separating system in normal condition, and scrubbers and purifiers in condition to throw no abnormal back pressure on plant. Operating personnel of the plant should be of high grade, and should not be changed until entire series of tests are completed. Particular care must be used to see that oil meters are in good condition, and at least one duplicate oil meter must be on hand to substitute in case of failure.

*Test Period.*—During the test period the following observations must be made, recorded and tabulated in a systematic manner:

1. Quantity of gas-making oil used daily in gallons. Meter measurement corrected.

2. Quantity of generator heat oil used daily in gallons. Meter measurement corrected.

3. Quantity of boiler fuel oil used daily in gallons. Meter measurement corrected.

4. Quantity of oil used for all purposes daily in gallons, tank measurement. This is the oil quantity which will control, and the total of items 1, 2 and 3 must equal this.

5. Quality of oil used determined by chemical analyses, a half-pint sample to be taken from the cold oil line at 12 noon and 12 midnight each day, these samples to be placed as taken in a tight 2-gal. can. At end of each week oil in large can to be thoroughly mixed by shaking and two 1-pint samples to be withdrawn for testing. Weekly tests include per cent water and per cent sulphur and gravity in degrees Baume. Once each month a distillation shall be made to determine percentage of gasoline, engine distillate, kerosene and fuel residue.

6. Temperature of oil as used in generators. Daily average of thermometer readings taken every three hours.

7. Number of gas-making runs made daily, with average duration of each heating, gas-making and steaming-out period.

8. Temperature observations on generator interior or on gas as it leaves the generator. There are practical difficulties in the way of satisfactory temperature observations on a generator. Committee in charge should make a special effort, however, to obtain satisfactory data on generator temperatures.

9. Quantity of gas made daily in cubic feet corrected to a temperature of 60 deg. Fahr. and at 30-in. mercury pressure.

10. Temperature of gas as measured daily. A weighted average of thermometer readings made every three hours unless there are severe fluctuations in temperature; if this is the case, readings should be hourly.

11. Quality of gas made daily in B.t.u. per cubic foot under standard conditions. Weighted average of calorimeter tests made every three hours at a distance of not less than one mile from the works.

12. Chemical composition of gas. Analysis to be made on a sample taken once each week, when calorimeter test shows that gas is of standard test quality.

13. Specific gravity of gas. Determined weekly at a period when gas is of standard quality.

14. Total sulphur in gas. Taken weekly by referee's method when gas is free from $H_2S$.

15. Quantity of dry lampblack made in pounds per 1,000 cu. ft. of gas made. It will probably be impracticable to determine weight of lampblack made each day, but a careful three-day test should be made once each month.

16. Quality of lampblack made determined from samples taken twice each month when plant is working under normal test conditions. Tests should include per cent volatile matter in dry sample determined as for coal, per cent soluble in carbon bisulphide, and suitability for briquetting determined, if possible, by an actual test on a large sample.

17. Quantity of steam used for injecting gas-making oil in pounds per 1,000 cu. ft. of gas made. This measurement can be made with an orifice meter if a steam meter is not available.

18. Miscellaneous observations should include:

(a) Generator capacity.
(b) Air blast pressure.
(c) Steam pressure on injectors.
(d) Oil pressure on injectors.
(e) Back pressure on generator.
(f) Back pressure on wash box.
(g) Temperature on first scrubber outlet.
(h) Temperature on final scrubber outlet.
(i) Wash water per 1,000 cu. ft. made.
(j) Scrubber water per 1,000 cu. ft. made.
(k) Napthalene contents.
(l) Careful observation of effect of different manufacturing conditions, repair conditions and life of brickwork in generataor.
(m) Careful observation of general operating conditions around works; relative difficulty and cost of handling tar, lampblack, etc.

In connection with the plant investigation there will be carried on a series of tests on utilization of gas of various B.t.u. contents. These will consist of laboratory observations of boiling, cooking and heating tests, each test of the different qualities of gas to be carried on under identical conditions, these tests to be augmented by actual observation of the effect of various calorific value on the consumption of gas.

This is a test of real value, for it will be the first time in this country that the gas service of a community has been placed at the disposal of an investigating body to determine by actual observation the effect of various heating values on the gas consumption. It is to the credit of the Public Utility Commission of the State and its progressive engineering organization that such a practicable test is possible.

The general plan suggested by the

Test Committee on the test appliances follows:

II — Tests to Determine Efficiency and Economy of Gas for Consumers' Service

*General.* — During the different gas-manufacturing test periods outlined in "I" above, the following tests should be made to determine the value of the different qualities of gas for service to consumers. Each test should, of course, be made with the different qualities of gas under identical conditions; i. e., all the conditions of each series of tests must be so controlled that the only variable is in the gas itself.

18. Adjust a top burner of a standard gas range to give as perfect combustion as possible with the burner cock wide open and with a pressure of 4-in. water column on the manifold. Under these conditions the tip of the Bunsen flame should barely touch the bottom of a vessel placed upon the grid. A given weight of water—say, 6 lb.—placed in a standard covered kettle should then be heated through a range of approximately 100 deg. Fahr. and the amount of gas required carefully measured. Observations to be made on this test are as follows:

(a) Room temperature at start of test.

(b) Room temperature at finish of test.

(c) Calorimeter value of gas used taken during middle period of test, corrected as usual standards.

(d) Weight of water used.

(e) Temperature of water to 1/10 deg. Fahr. at beginning of test.

(f) Temperature of water 1/10 deg. Fahr. at end of test.

(g) Meter reading beginning of test to 1/1000 cu. ft.

(h) Meter readings end of test to 1/1000.

(i) Average temperature of gas meter.

(j) Barometer reading.

(k) Corrected volume of gas used.

(l) Rate of B.t.u. input per minute.

(m) Time elapsed in seconds from beginning to end of test.

(n) Efficiency in per cent; equals

$$\frac{D \times (F\text{-}E) \times 100}{K \times C}$$

By using the same vessel for all tests the thermal capacity of the vessel itself need not be considered. Room temperatures should be very nearly the same for all tests.

20. Determine the quantity of gas required to maintain covered kettle containing 4 lb. of water and 2 lb. of potatoes, boiling quietly for a period of one hour. Practical details of this test will have to be worked out by experiment, and it may be found impossible to carry on a test of this kind under conditions which will be strictly comparable. If, however, it is found such a test is practicable, I would deem it a very valuable test.

21. Adjust oven burner on a standard range equipped with a Lorain heat regulator to give good combustion. Set regulator at proper point to bake potatoes, meat or any other selected food. Place full-sized lot of such food in the oven and observe corrected volume of gas required to maintain oven at this temperature for a period of one hour. Check operations of heat regulator by means of a Tycos oven thermometer placed in the oven. Various similar oven tests could be made on a range equipped with a heat regulator.

22. Conduct series of tests with a 2 or 3 gal. automatic heater equipped with an accurately working thermostat. Adjust burner to give best combustion and set thermostat to give a water temperature of 130 to 140 deg. Fahr. Set carefully calibrated dry meter on inlet to heater and observe quantity of gas required to heat relatively large quantity of water—say, 30 gal. An accurate thermometer to be installed on water inlet pipe within 1 ft. of heater and a similar thermometer on outlet pipe. Take readings of inlet and outlet thermometers every minute, and average to show use in water temperature throughout test. Measure water in a previously calibrated tank.

23. If possible, a series of tests should be made to determine the room-heating efficiency of the different gases when used in a space heater of the radiant-fire type. The practical features of this test will be somewhat troublesome, but an effort must be made to surmount them, as this is an important test.

24. A series of tests should be run on an industrial gas appliance of some kind—either a small steam boiler, a candy furnace, type-metal furnace or some other appliance selected by the committee.

*Discussion.*—The above tests 19 to 24, inclusive, are to be tests of a practical nature, made on commercial gas appliances but under rigid laboratory methods and control. As a check on the above tests, certain observations as outlined below are to be made on the actual use of gas by consumers. On account, however, of the large number of variables entering into the actual use of gas by consumers, which variables cannot be controlled, it is felt that the results of the scientific tests made should be accepted as conclusive and the consumers' tests should be considered only as interesting checks.

*Consumers' Tests.* — 25. A comparison should be made of the average monthly consumption per consumer of all consumers in each city, eliminating only such large consumers as may have been added or lost during the progress of the tests. In order for these tests to have any value, temperature conditions of the different test periods must be comparable. At best it is felt this series of tests will be of dubious value.

26. A fairly large number—say, 200—of normal consumers of various classes should be selected and their gas consumption per month on the different qualities of gas compared. Great care must be used in the selection of these consumers to obtain representatives of the various types who will not be subject to much fluctuation in their use of gas. The use of each consumer should be studied on the ground during the test, and a correction should be applied for any decided change in the amount of work done by a given consumer.

Little time was lost, after the preliminary plans were adopted, to get a working force in the field to make preparations for the investigation. An engineering staff was organized; this was placed under Lester S. Ready, chairman of the General Committee, and consists of F. Emerson Hoar, engineer in charge; Ed. S. Bryant, assistant engineer in field; Walter M. Argabrite, assistant field engineer, San Jose plant, and Fred C. Champion, assistant field engineer, Santa Barbara plant.

A definite plan in detail has been decided upon for the plant observations. The equipment necessary is being assembled and laboratories installed. The field staff has been working since April and everything will be in readiness for an actual start on plant observations by July 1.

Before the plant tests get under way a complete report of the appliance or utilization tests will be pre-

sented to the General Committee for adoption. The engineering staff is now working on the details.

The value of the investigation as programed will be of untold value to the gas industry. The investigation is not necessarily confined to the present plan, for the observation may carry the investigation over a vast and varied field. The subject is immense; in general, has been neglected by any organized exploration for the purpose of determining the economy and efficiency of gases fuel. For this neglect we are possibly paying a heavy penalty in the waste of our fuel resources. The committee is starting out with impartiality, having an absolutely open mind, and this, we are assured, will make their findings all the more acceptable. With such an opportunity at their disposal, and with unrestricted support, they are warranted in taking all the time necessary. This in order to carry out the research thoroughly, that the results will be definite and conclusive.

## Heavy Gas Flow in Menard County

A flow of gas estimated to be between 500,000 and 1,000,000 cu. ft. per twenty-four hours is issuing from the well of the Lea Oil Company on the Ball ranch in Menard County, Texas. The gas developed when the drill struck sand between 1,475 and 1,500 ft. Forty-five feet higher a 25-ft. stratum, saturated with oil, has been penetrated. The strike is considered important because it extends promising showings in the Menard field almost twenty miles west, the extension including both the James Russell and the Ellis wells.

Two weeks ago 1,000,000 ft. of gas was struck in the Mears well by the Brazos Menard Oil Development Company. At both tests 10-in. casing is now being set to shut off water and permit further drilling.

## Heating Houses With Gas Found to Be Economical

It will doubtless surprise a good many householders, who now pay gas bills amounting perhaps to $5 or $6 a year for incidental uses alone, to learn that heating whole houses and buildings with gas is not only an economic possibility, but an accomplished fact in a number of cities. In the absence of information as to the comparative heating values of coal and gas, the popular tendency is to consider gas consumption economical only for the smaller duties, where convenience and controllability are major assets.

Except for sporadic experiments, the use of artificial gas for house heating is new. In only a few cities, like St. Louis, Portland, Ore., and Baltimore, is a comprehensive campaign for gas heating actually under way, though the Chicago company has a department for handling such applications, San Francisco has a number of installations, and many other cities can show one or more examples of successful gas-burning houses.

The householder, casting doubtfully about in unfamiliar fields for a possible substitute for coal, is interested first of all in cost. What fuel will maintain his dwelling at the same comfortable temperature, and yet not throw him from the frying pan into the fire by giving him new bills higher than the old ones he is trying to escape? Based purely on the cost of raw fuel, at so much per heating unit, the answer is, none. Even at present prices for coal, and considering that gas rates in most places have not been raised, coal heat is cheaper than gas heat.

There are, however, other considerations than mere heating power. Add to the coal bill the cost, in time or money, of furnace feeding and ash removal, the annual overhauling of the coal-burning plant, the very tangible item of damage by dust and smoke, and the gas burner immediately becomes a potent competitor. The fact, perhaps not generally known, is that practically all gas-service concerns give lower rates to large users, and even the small house-heating customer certainly falls in that category.

In Portand, Ore., a flat rate of 50 cents per 1,000 cu. ft., through a separate meter is made for the benefit of house-heating installations. In St. Louis, a so-called block-rate system is used, the consumers being grouped in divisions according to whether their maximum consumption per hour is below 2,000 cu. ft., above 3,000 cu. ft., or falls between these extremes. Each customer is billed for so many feet at 85 cents, so many feet at 60 cents, and the balance at 50 cents. In Detroit, 85 cents per 1,000 cu. ft. is charged up to 50,000 a month, 75 cents from that up to 100,000, 65 cents up to 200,000, and 55 cents for all used above that figure. In Baltimore, an arbitrary consumption rate is fixed for each house, varying from 4,000 cu. ft. for a six-room house to 10,000 cu. ft. for a 12-room house, and 75 cents per 1,000 is charged on that basis, all excess used in the month being billed at the secondary rate of 50 cents per 1,000.

While various kinds of coal differ as to their heating value, the householder gets little information on the subject. Gas also differs, but within limits regulated, as a rule, by State or municipal law, and therefore a matter of public knowledge. Gas supplied in Montana must have a heat value of not less than 475 B.t.u., in Connecticut 528, in Illinois 530 to 565, and in New York 650. In Canada the requirement is only 450 units. In the United States, however, 550 and 600 are practically standard figures. Careful and repeated tests by heating engineers have established it as a fact that:

One ton of anthracite coal is equaled in heating value by 32,000 cu. ft. of 550-B.t.u. gas, or 239,333 cu. ft. or 600B.t.u. gas.

The Arlington Gas Light Company, Arlington, Mass., has petitioned the Department of Public Utilities for a revision of the order of June, 1919, at which the price of gas to the consumer was fixed at $1.25 1,000 cu. ft. The company states it cannot do business at a profit at this rate.

The Pacific Gas & Electric Company, San Francisco, Cal., has declared the regular quarterly dividend of $1.25 a share on the common stock, payable July 15 to holders of record June 30.

## Utilities Board to Fix Gas Rates

The city of Flint, Mich., and the Michigan Light Company have agreed to turn over to the State Public Utilities Commission for five years the power of fixing gas rates and regulating service in the city of Flint under an act of the last legislature, waiving the arbitration provided for in the company's franchise at five-year periods. The city retains the right to inspect meters and test the quality of gas and at any time on request of either party or motion of the commission itself.

## Gas Sales Association of New England Holds Annual Meeting

(*Continued from page* 508.)

of gas stoves. Here is where the manufacturer's salesman can help the gas company, and I am sure that all of us would be glad to do what we can to instruct your employees about our various products, and explain to them the causes of troubles and how to remedy them, for your salesmen cannot know too much about the goods they are selling.

"The gas range has become a household necessity, and its advantages are generally recognized, but the coal stove is still a most stubborn competitor, and has quite successfully withstood the advances of the gas stove into th cold weather months. To-night we will try to devise a means of more successfully getting after that business. If it is possible to solve the problem before us; if these cold months can be made more productive, then now is the psychological time to go after the business. To strike hard, and keep on striking until all obstacles are overcome and the end secured. It means hard work, intelligent, persistent and patient work, but I believe success would be the sure reward.

"We are doing great things to-day and nothing seems too hard for us, but in every instance we must first have the vision, and then the ability and courage to tackle it. We all remember the great fortress at Liege which all the world except the Huns believed to be impregnable. It obstructed their advance and it was necessary to reduce it. They studied the situation and decided that it could be done. They laid their plans, set siege to it, and hammered away until they got it, and that is just the spirit with the task under consideration must be handled. The cold weather months are in your way, they hinder your progress and they must be overcome, and, I believe, we have right here to-night men of the kind of stuff that can put it over, and thereby demonstrate in a larger way as one of our members has done, that it is possible to accomplish that which has hitherto been considered the impossible: to boost gas sales during the months of October, November, December, January, February and March up to those of the milder months. He visualized the proposition, believed it could be done, laid his plans, and went ahead and did it, thereby performing a great service for the gas industry. He has blazed the way and others can follow.

"Gentlemen, the proposition is before you. It is 'to be, or not to be.' It must be the former. The stakes are too large, the opportunity too great to be neglected or delayed any longer. The effort is worth while many times over. Then let us get together and go to it. I use the word us as it is a matter that concerns the stove manufacturer as well as the gas company, and there is much that he can do to help in the undertaking. It may take time to get the desired results, but we must remember that the world was not made in a day. It will take time and we must expect it.

"Plans must be carefully worked out and then followed with good constructive work. Let the work be started at once with the most effective propaganda. Advertise. Send out letters on special lists where coal stoves are being used. Enclose circulars with your gas bills, and where possible, secure write-ups or editorials in the newspapers as often as possible. Pull every string to bring these people over. Enthuse every employee with the idea. Talk unceasingly the advantages of the gas range over the coal stove for winter use. Hammer away at its economy, convenience, cleanliness. That it eliminates the drudgery of carrying coal and ashes, and the necessity of getting out of bed early on cold mornings to start the kitchen fire. That it is in reality as good for winter as for summer, and that notwithstanding the present higher price of gas, it is cheaper to operate than the coal stove. Get down to brass tacks and be able to produce the exact figures so that every prospect will become convinced and converted. Drive these facts home until they grip the people, and the hardest part of the work will be accomplished.

"The problem of heating the kitchen has been the great handicap in securing this cold weather business, but I believe that would in a large measure take care of itself once the people were convinced, as they should be, that the gas stove is the proper thing to cook with the year round, and therein lies the call for good salesmanship.

"I am neither a prophet nor the son of a prophet, but I tell you that if you tackle this proposition as you must to be successful, you will not only boost your gas sales during the cold months, but the very work done in that accomplishment will produce record sales for every month of the year. It will put more pep into the business. It will mean a commercial department that is plugging for, and getting, business the year round, thereby benefiting both employer and employee, and in this connection I would urge the importance of making your showroom exhibits and window displays just as attractive in winter as in summer, and changing them just as frequently, with no letup on your sales campaigns or demonstrations of gas stoves and other appliances. All of this will do much to demonstrate that the gas stove is a real live winter proposition, and help greatly in increasing your sales of both gas and gas stoves.

"I have been placing special emphasis on the sales of gas rather than the sales of gas stoves, for therein lies very largely the solution of the problem. There are thousands of coal stoves in use in your towns, and if a gas stove is installed where one of them is used you get but six months production from it. If you want a hundred per cent production instead of fifty-fifty, these coal stoves must go out of commission. Therefore, if you install a gas stove alongside of a coal stove your work is but half done. Get after an installation every time that will produce twelve months of the year, that you will get all of the business.

"It will take a higher grade salesman to get such results, but it is worth while and you cannot afford to employ a cheap one. The cheap salesman is generally the most expensive in the end. Get a good man. Pay him well. Give him every possible assistance, for while anybody can sell a gas stove these days, it takes a real salesman to throw out a coal stove.

"Organize your sales and fitting forces. Get them together frequently and secure speakers to instruct them about the various appliances. Leave nothing undone to increase their interest and efficiency, and the results will be most beneficial to both yourselves and to them. Many of you have been doing this and are in excellent shape to take hold of such an undertaking as we are considering.

"The gas company is indeed a new institution to-day as compared with what it used to be, for whereas formerly it was satisfied with a fair re-

turn on its investment, to-day nearly every gas company of any size is as aggressive and up-to-date as any merchant or manufacturer; never satisfied with present results, but ever increasing and reaching out for more business, with results in many instances that would have been considered impossible a decade ago; gas output and stove sales not only doubled, but multiplied many times over, and the end is not yet.

"I remember where in one of our large cities not so very many years ago, the gas company thought they were going some when they got where they could place an order for twenty-five gas ranges; for years now they have been placing orders annually for from eight hundred to one thousand, and think nothing of it. So much for new business methods and new blood, and we have in our midst to-night many men who have been instrumental in bringing about such results.

"In our larger cities where there are so many apartments with all gas kitchens, the coal stove does not figure so largely as in the smaller towns, but if the coal stoves in these large towns were dispensed with, the increase in the gas output would be astonishing.

Figuring that for every coal stove that is in use where a gas stove is installed, the loss to the gas company is fifteen dollars a year; estimating that the average gas stove produces at the rate of thirty dollars a year, we have a loss to the gas company of fifteen hundred dollars a year on one hundred such installations, or fifteen thousand dollars on one thousand. This is certainly business worth getting after, and I believe the start so successively made recently, and to which I have referred, is but the harbinger of what is to follow.

"New England has led the country in many things, and it would certainly give her additional prestige were she to be the first to demonstrate that it is possible to do a summer gas business in the middle of winter; to maintain high watermark sales of gas and gas stoves the year round.

"Gentlemen, the opportunity is yours as never before. Do you believe in it, and are you big enough for it? That question needs no answer. Shall we not then get together and with united and well directed effort take advantage of it? I leave the proposition with you."

William Gould—Gentlemen, this is the annual meeting. The committee on nominations, Mr. Cyrus Barnes, chairman; Mr. S. E. Gillette, Mr. John L. Murray, Mr. Wm. S. Bodwell, will report. Mr. Barnes is convalescing from an operation and therefore is unable to be present. Mr. Bodwell will read the report for him.

Mr. Bodwell—Mr. Governor and Gentlemen: Your committee reports the following nominations: H. J. Pettingell, Jr., governor; Theodore H. Piser, Frank C. Cadwallader, Fred K. Wells, Karl S. Barnes, M. B. Webber, R. B. Fancy, board of managers.

Mr. F. A. Woodhead—Mr. Governor, I move that the nominations be closed and that the secretary be directed to cast one ballot for the nominees reported by the nomination committee. The motion was seconded and carried unanimously. Mr. Woodhead, secretary pro tem., then proceeded to cast one ballot and declared the list elected.

William Gould—The constitution prescribes as one of the duties of the retiring governor, a speech in which he shall recount the history of the association under his direction.

This association was started over three years ago. Its inception was in my office and between myself and two others. Two more men with us started the association.

For your information, Mr. Person, I think that the only other active association on the sales end of the gas industry to hold meetings all during the war beside the Gas Sales Association was the Commercial Managers Association. Of course the Gas Guild held meetings, but they are not a sales association. It is rather a record.

I am proud of this association, to put it mildly. I know that we have achieved results. I have worked hard. Every member of the board of managers has worked equally hard. Each manager has taken care of some meeting. For instance, to-night Mr. Abbott furnished Mr. Stafford. Mr. William H. West secured Mr. Wells and so on for the past year. Each member of the board of managers has done his best. You old members who have stood by us through the war may justly feel that to you belongs most of the credit for the splendid record during the war.

We have changed from dues of $10 with dinners extra to dues of $10, and free dinners to members. Our meetings have increased right up to the present time. To-night we have 60 people here. We had 63 or 64 last month, and there is no reason in the world why the meetings should not increase in volume.

The membership of this association is limited to 100. There are already over 70 members. Our association is affiliated with the American Gas Association. Some of our members hold office in that organization.

We have established an honorable name for ourselves. We are known from one side of the country to the other as being a live, wide-awake bunch of gas men and gas appliance men. I am sure that under the leadership of your new governor, Mr. Pettingell, our association will surpass its former records.

Let me thank you for your courtesy and consideration for me and our board of managers. Your attitude has been appreciated more than you realize, and now, since it is best to stop when through talking, I once more thank you and retire to a side where I may enjoy the show without the load of responsibility which has weighed so heavily on my shoulders in the past.

## Santa Maria Gas Deal

Santa Maria Gas Company, Santa Maria, Cal., has been authorized by the Railroad Commission to acquire all properties of the Santa Maria Gas & Power Company and certain properties of the Midland Counties Public Service Corporation. According to the decision, the Santa Maria Gas Company is authorized to issue $300,000 of stock, $408,000 of 6 per cent 20-year bonds and $82,000 of 6 per cent three-year notes to close the deal and unite the properties under one management.

In acquiring the property of the Santa Maria Gas & Power Company the new company is to assume all the indebtedness of the old company and in addition to issue to the old company $300,000 of the new company's capital stock.

The Attleboro Gas Light Company, Attleboro, Mass., has been granted permission by the Department of Public Utilities to increase its price of gas from $1.30 to $1.40 per 1,000 cu. ft.

The Ohio Fuel Supply Company, Pittsburgh, Pa., has declared an extra dividend of 2 per cent, payable in Victory 4¾ per cent bonds.

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BLAIR, CAMBELL & McLEAN, LTD.
IN THE UNITED STATES AND CANADA

## Corncobs Used in Gas Manufacture

Corncobs are used in the process of manufacturing gas in the plant which the city of Omaha, Neb., will formally take over on July 1.

After the gas has been made according to formulae, based on chemical reaction, it is put through a purifying house, where wet corncobs covered with iron ore take up the impurities, chiefly sulphur and tar. Thus the humble corncob has found its place in science. There is a series of pits where the gas goes through this purifying process before being sent through the mains to householders. At intervals these pits are cleaned out and the used corncobs replaced by a fresh supply.

Municipal ownership of the gas plant will be accomplished within a few weeks, the city to pay $4,500,000 for the plant and approximately $300,000 for improvements since 1918, supplies and materials, and for other items. The Metropolitan Water Board will have control of the plant.

The gas made at the plant of the Omaha Gas Company is known as enriched water gas, coke, steam and gas oil being the ingredients, mixed according to formula.

"It is all done by chemical reaction, and the science of making gas is an exact science," said Sidney C. Singer, superintendent of distribution, as he directed a visitor through the vagaries of gas making.

The first operation in making gas is to fire a lot of coke in a fire-brick lined generator and apply air to raise the heat to 2,000 degrees. Steam entering this heat is immediately decomposed into hydrogen and oxygen, the latter combining with the carbon of the coke and forming what is known as a blue gas or carbon monoxide. The blue gas is then transferred into a carbureter, of similar size and design as the generator. This gas comes into contact with checker-brick heated to an intense degree and at this point a definite amount of gas oil is sprayed onto the brick, which are so hot that the oil instantly vaporizes, and as the blue gas passes the point of vaporization it "picks up" the oily vapors and in that manner the gas attains its heating and lighting values. The gas then goes into a third cylindrical tank, a superheater, in which the temperature is 1,400 degrees, at which heat the elements are joined by what is known as chemical affinity.

In the introduction of the steam into the generator, and the oil into the carbureter, there are periods which must be observed with clockwork precision. The steam is turned on for three minutes and then oil for four minutes, intermittently, and it must be precisely so or there may be parts of the plant going through the roof.

Having the gas in the superheater at a temperature of 1,300 to 1,400, it is then sent through water and into a condenser to be cooled and then into a large relief tank, where the various "batches" mix to give uniformity of quality. From the relief tank it passes through the purifying house, where impurities are released through the wet corncob and iron ore treatment already referred to.

On its journey from the superheater, with a temperature of nearly 1,400 degrees, to the service main, with a temperature of 55 to 60 degrees, the gas eliminates by-products, known as creosote and tar, which are carried in suspension when the gas is hot, but are released as it cools. A small per cent of this superfluous matter is carried with the gas into the service mains and it falls along the way into drip basins, which are emptied from time to time.

In sending the gas out to consumers there are four factors which must be watched—heat units, candlepower, pressure and temperature. A storage supply of gas is held in a large tank with capacity of 1,300,000 cu. ft. Experience has given the company an estimate of the load which must be carried in the mains during certain hours of the day, and it is easily understood that the consumption is increased during the three meal-preparation periods of the day.

An average of 13,000 gallons of oil are used every day. This is a heavy oil, being the crude oil after the light oils have been taken off at the refineries.

## Haverhill Gas Earnings

A recent report of Stone and Webster properties, of which the Haverhill Gas Company, Haverhill, Mass., is one, gives the following figures on the local concern: Gross earnings, April, $86,557; gross earnings, 12 months period ending April 30, $414,621; surplus after charges, 12 months period $60,084.

## Gas Pressure to Govern Price

A provision establishing a gas pressure of 4 ounces as a minimum on which to base rates will be one of the features of the renewal franchise to be negotiated by the city of Cleveland, Ohio, with the East Ohio Gas Company. When the pressure falls below that figure a reduction in price to the consumer will be made.

This is indicated by the new contract offered by the city.

At the request of Councilman J. R. Hinchliffe a clause was put into the contract providing that a gas expert study the pressure at which the East Ohio buys its gas from the West Virginia field and at which it sells the gas in the city.

Hinchliffe holds the company could maintain normal pressure throughout the year. He calls attention to low pressure last winter, which he said obtained on about one-third the days of the winter season.

"If consumers cannot have gas at the pressure named in the franchise they should have a discount, for they would not be supplied all they contract for unless they get normal pressure," says Hinchliffe.

His idea is to provide a discount in rates to consumers whenever the pressure falls, so that the company must maintain a 4-ounce pressure or lose a substantial amount of its revenue. There is now a flat rate of 35 cents a thousand cubic feet, and the company has indicated it will ask for 80 cents in the new franchise.

The details of the plan are to be worked out after a report of the investigation has been made. There are now no exact figures available to the city concerning the pressure maintained last winter. Some readings made by the city chemist's office show the pressure fell to ½ or 1 ounce in all parts of the city on cold days. It is this condition that Hinchliffe aims to obviate; or, if it is impossible to avoid low pressure, he wants the consumer to benefit by a discount on rates.

Another clause in the contract, also inserted at Hinchliffe's request, provides for a study of the extraction of gasoline from natural gas and its effect on the quality of gas supplied the city. If this is found to detract from the gas used here, cognizance is to be taken of it in the franchise and benefit given the consumer in the rates.

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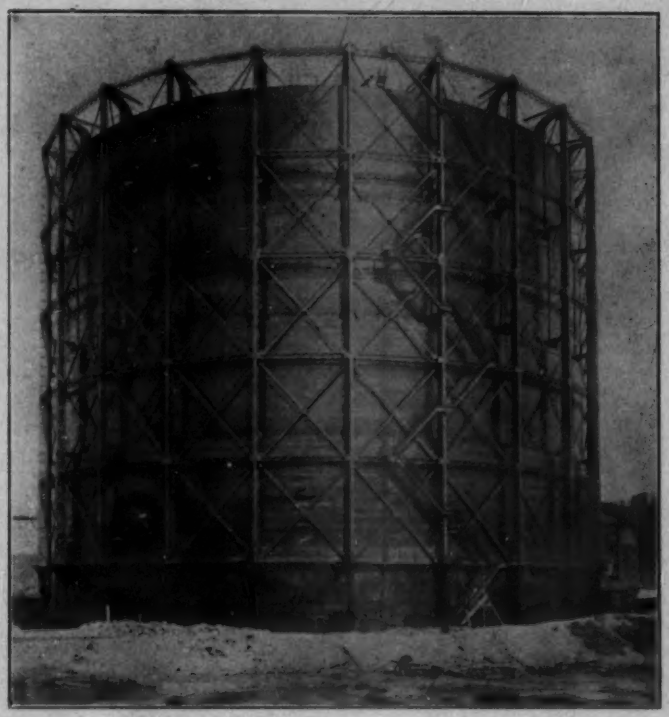

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## Fort Worth and Waco to Get West Texas Gas

The granting of a higher gas rate by the city of Fort Worth, Texas, to the Fort Worth Gas Company is a big step by that city toward a good supply of gas next winter, while Dallas' supply is likely to be even less than last winter, according to O. M. Colston, assistant to the vice-president and general manager of the Lone Star Gas Company.

Fort Worth will receive West Texas gas from a connection with the Joshua line by reason of granting the rate increase, which Dallas refused, Mr. Colston said. Present plans do not provide for the furnishing of gas from West Texas to any other North Texas city except Fort Worth. Waco will receive gas from West Texas, having granted a rate increase to its distributing company.

"The Lone Star Gas Company and the Dallas Gas Company have withdrawn their offers for a contract to furnish gas at an increased rate, since the city of Dallas has rejected the contract offered by the gas companies," Mr. Colston said.

The wells in North Texas and Oklahoma fields naturally are lessening in volume as they grow older, and Dallas is supplied from those fields.

## Announcement of Removal of Office

The Berwind-White Coal Mining Company announces the removal of its New York office from 1 Broadway, where it has been located for a number of years, to 11 Broadway. The new address will be in effect on and after July 1.

## Change of Firm Name

The company name of Blair, Campbell & McLean, Inc., has been changed to the American Chemical & Sugar Machinery Company. The new company is the sole sales representative of Blair, Campbell & McLean, Ltd., of Glasgow, Scotland, in the United States and Canada, and has a right to manufacture and sell under its own name, without restrictions as to domestic or foreign territory, all chemical and sugar machinery for which Blair, Campbell & McLean, Ltd., hold patents, licenses or rights to manufacture.

This company manufactures the McLaurin Patent Centrifugal Gas Scrubbers in standard sizes. The offices of the company are in the Colonial Trust Building, Philadelphia, Pa., and the officials are: James C. Lawrence, president; G. H. Elmore, vice-president, and Allan C. Wood, secretary and treasurer.

## Pacific G. & E. Note Issue Almost Entirely Sold

Despite the demands on the money market, the efforts for reduction of existing inflation and general dulness of the investment market, the issue of Pacific Gas & Electric Company of $10,000,000 five-year 7 per cent collateral trust convertible gold notes has been practically absorbed. The syndicate handling the issue locally, consisting of Blyth, Witter & Co., Bond & Goodwin, and Cyrus, Pierce & Co., stated that the total amount of sales as reported to them was over $8,500,000, leaving but $1,500,000 of the notes unsold. These will be readily disposed of in all probability by participants who have not as yet stated to the syndicate managers the amount of their sales.

The rapid absorption of this issue is not only a tribute to the organizations of California investment bankers but as well to the standing of the Pacific Gas & Electric Company in the money markets. The company's progressive attitude, its tremendous plans for development of northern California through hydroelectric energy, have made a distinct local appeal, as was evidenced by the fact that the greater part of the note issue by far was sold in the West.

## Brooklyn Union Asks Extension of 80c. Gas Injunction

Judge H. G. Ward, of the Federal Circuit Court, and Judges Julius M. Mayer and John C. Knox, of the United States District Court, have been asked by the Brooklyn Union Gas Company, Brooklyn, N. Y., through its counsel, William M. Dyckman, to continue the injunction granted to the company on March 8 against Charles D. Newton, Attorney-General; Lewis Nixon, public service commissioner, and District Attorney Lewis of Kings County, prohibiting the enforcement of the provision of the laws of 1915 which limits the price of gas in Brooklyn to 80 cents per 1,000 cu. ft.

It was provided in the Federal court's injunction that the company might charge 97 cents per 1,000 cu. ft. in Brooklyn until Aug. 1, but must deposit 17 cents in court awaiting final judgment, when, should the case be decided against the consumers, they will have the money returned.

THE UNION NATURAL GAS CORPORATION, Pittsburgh, Pa., has declared the regular quarterly dividend of 2½ per cent, payable July 15 to stock of record June 30.

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Brown Pyrometers increase your plant's efficiency,—produce better gas on less fuel. Probably 85% of all gas plants using Pyrometers use Brown's. Brown Pyrometers are backed by 57 years of continuous success. Their operation is absolutely guaranteed.

Write to the Brown Instrument Co., Philadelphia, or one of their district offices in New York, Pittsburgh, Detroit, Chicago, Denver, San Francisco or Los Angeles for complete information now.

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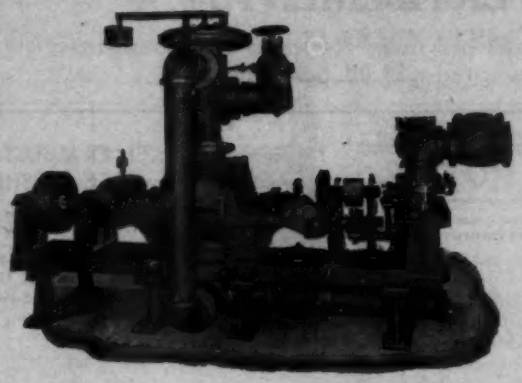

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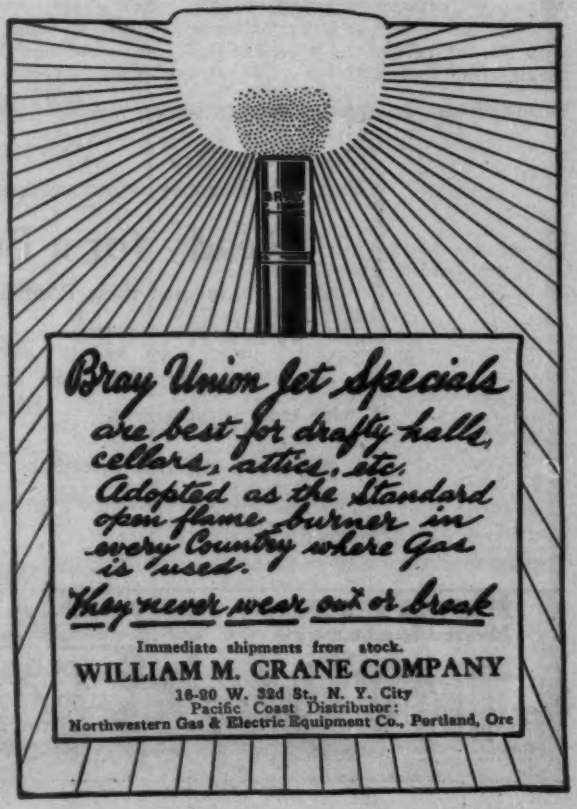
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WANTED—Stokers; coal gas plant; $35 per week. Hyattsville Gas & Electric Co., Hyattsville, Md.

WANTED—Salesman to build up gas and electric business by selling gas and electric appliances in city of 25,000 in New York State. Address Box No. 341, care of the American Gas Engineering Journal.

WANTED—GAS APPLIANCE SALESMEN: only high-class men who have worked on straight commission need apply; guaranteed drawing account against commission. State age, references, experience and how soon you can report in first letter. Address Box No. 342, care of the American Gas Engineering Journal.

## DIVIDEND NOTICE

**Office of the United Gas Improvement Co**
N. W. Corner Broad and Arch Sts.
Philadelphia, June 9, 1920.

The Directors have this day declared a quarterly dividend of two per cent. ($1.00 per share) on the Common Stock of this Company, payable July 15, 1920, to stockholders of record at the close of business June 30, 1920. Checks will be mailed.

I. W. MORRIS, Treasurer.

## POSITIONS WANTED

WANTED—Position. By married man, 33 years of age, with 10 years' experience as foreman in coal and water gas plants; also familiar with distribution work. Am employed in a combination plant at present. Good reasons for leaving; can furnish references. Address Box No. 344, care of the AMERICAN GAS ENGINEERING JOURNAL.

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ESTABLISHED 1828

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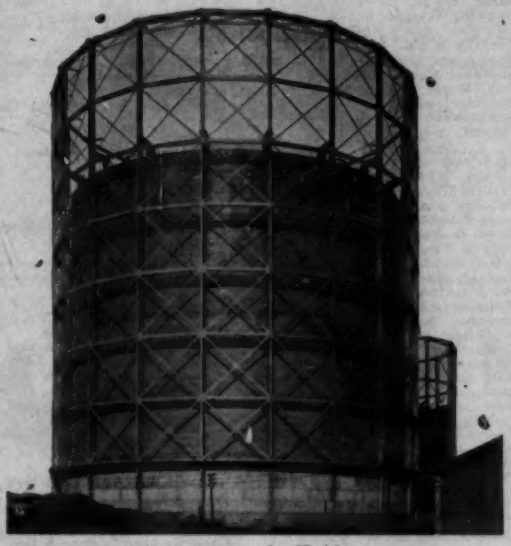

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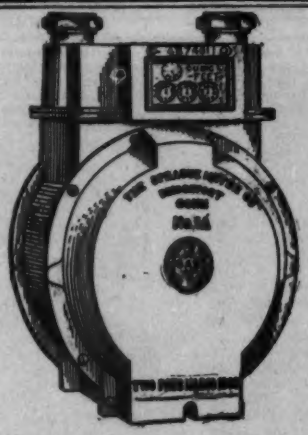

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BRIDGEPORT, CONN.

Los Angeles, Cal., Davenport, Ia., San Francisco, Cal

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**AUTOMATIC HEAT CONTROLLER AND REGULATORS**
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Improved Equipment Co.
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**DISCHARGING MACHINERY**
Isbell-Porter Co.

**DRIP PUMP BOX**
Keller, C. M.

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Craig Ridgway & Son Co.

**ENGINEERS**
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Improved Appliance Co., The
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Isbell-Porter Co.
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Gas Machinery Co.
Gautier & Co., J. H.
Improved Equipment Co.
Maurer & Son, Henry
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**FIRST-AID EQUIPMENT**
United Gas Improvement Co.

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General Gas Light Co.
Welsbach St. Lt. Co. of Amer.
Welsbach Co.

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Improved Appliance Co., The
Surface Combustion Co.

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Connelly Iron Sponge & Gov. Co.
United Gas Improvement Co.

**GAS PLANTS, COMPLETE**
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Davis & Farnum Mfg. Co.
Gas Machinery Co.
Isbell-Porter Co.
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Parker-Russell Min. & Mfg. Co.
Russell Engineering Co.
Stacey Manufacturing Co., The
Stacey Bros. Gas Constr. Co.
United Gas Improvement Co.
Western Gas Construction Co.
Wood & Co., R. D.

**GAS-TESTING APPARATUS**
American Meter Co., Inc.

**GAUGES**
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American Meter Co.
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Welsbach Co.

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Chaplin-Fulton Mfg. Co.
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Davis & Farnum Mfg. Co.
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Connelly Iron Sponge & Gov. Co.
Coke Oven
Connelly Iron Sponge & Gov. Co.
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Connelly Iron Sponge & Gov. Co.
Helme & McIlhenny
Isbell-Porter Co.
Exhauster
Connelly Iron Sponge & Gov. Co.
Isbell-Porter Co.
Fuel Gas
Connelly Iron Sponge & Gov. Co.
High Pressure
Connelly Iron Sponge & Gov. Co.
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Camden Iron Works
Cruse-Kemper Co.
Davis & Farnum Mfg. Co.
Deily & Fowler Mfg. Co.
Riter-Conley Co.
Stacey Bros. Gas Constr. Co.
Stacey Manufacturing Co., The
Western Gas Construction Co.
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Western Gas Construction Co.

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With Either Clay or Silica Retorts

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NATURAL GAS REGULATORS

For All Kinds of Pressure Reduction

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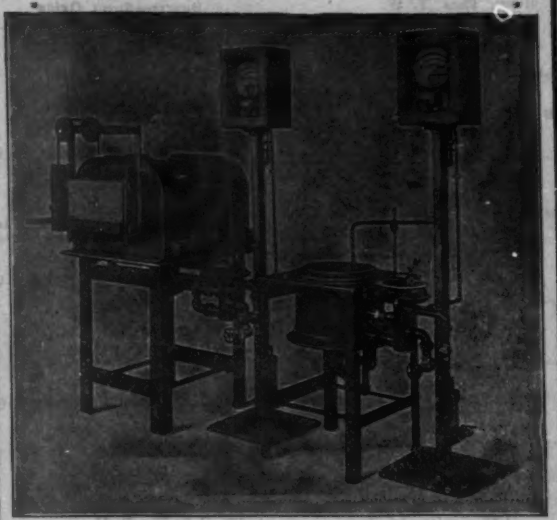

Lead Hardening Furnace and Oven Furnace with Automatic Heat Controller Attached.

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AMERICAN Gas Appliances are not found wanting.
A Trial will convince you.
They are used by the largest and most progressive Manufacturers for ACCURATE HEAT-TREATING OPERATIONS.
With our AUTOMATIC HEAT CONTROLLER and REGULATOR temperatures can be controlled to within five degrees of that required.

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Gas Engineers and Manufacturers
24 JOHN STREET NEW YORK CITY

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**INDICATORS**
Brown Instrument Co.

**INDUSTRIAL FUEL APPLIANCES**
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Improved Appliance Co., The
Kemp Mfg. Co., C. M.
Surface Combustion Co.

**INSTRUMENTS**
Recording
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Brown Instrument Co.

**IRON HYDROXIDE**
Iron Hydroxide Co.

**IRON SPONGE**
Connelly Iron Sponge & Gov. Co.

**IRON WORK**
Cruse-Kemper Co.
Davis & Farnum Mfg. Co.
Deily & Fowler Mfg. Co.
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Riter-Conley Co.
Stacey Bros. Gas Constr. Co.
Stacey Manufacturing Co., The
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Miner, Thos. T. W.
Welsbach Co.
Welsbach Street Lighting Co.

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Porch
Welsbach Co.

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General Gas Light Co.
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U. S. Cast Iron Pipe & Fdry. Co.
Welsbach Street Lighting Co.
Wood & Co., R. D.

**LEAD WOOL**
United Lead Co.

**MANTLES**
Gasmantle Factory Bale
General Gas Light Co.
Miner, Thos. T. W.
Welsbach St. Lig. Co. of Amer.
Welsbach Co.

**METERS**
Acetylene
American Meter Co.
Equitable Meater Co.
Helme & McIlhenny
Sprague Meter Co.
Superior Meter Co.
Air
Gas Machinery Co.
Superior Meter Co.
United Gas Improvement Co.
Artificial Gas
Griffin & Co., John J.
Helme & McIlhenny
Maryland Meter Works
Sprague Meter Co.
Superior Meter Co.

Complaint
Maryland Meter Works
Dry
American Meter Co., Inc.
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Prepayment
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McDonald & Co., D.
Sprague Meter Co.

Station
American Meter Co., Inc.
Griffin & Co., John J.
Helme & McIlhenny
Maryland Meter Works
McDonald & Co.

Steam
Gas Machinery Co.
United Gas Improvement Co.
Western Gas Construction Co.

Test
American Meter Co., Inc.
Maryland Meter Works
Sprague Meter Co.
Superior Meter Co.

Wet
American Meter Co., Inc.
Superior Meter Co.

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United Gas Improvement Co.

**MOTION RECORDER**
Brown Instrument Co.

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Gas Machinery Co.
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Russell Engineering Co.
Stacey Bros. Gas Constr. Co.
The Koppers Company

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Iron Hydroxide Co.
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Buyers—Spent Oxide

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Deily & Fowler Mfg. Co.
Riter-Conley Co.
Stacey Mfg. Co.
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J. Alex Mayers

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Jos. Dixon Crucible Co.

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Safety Gas Main Stopper Co.

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**TEMPERING AND COLORING MACHINE**
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Improved Appliance Co., The

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Superior Meter Co.

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Ludlow Valve Mfg. Co.
Stacey Bros. Gas Constr. Co.
Stacey Manufacturing Co., The
Western Gas Construction Co.
Wood & Co., R. D.
Lamp
Welsbach Co.
Oil, Steam and Water
Ludlow Valve Mfg. Co.
Back Pressure
Chaplin-Fulton Co.
Connelly Iron Sponge & Gov. Co.

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Western Gas Construction Co.

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Connelly Iron Sponge & Gov. Co.
Davis & Farnum Mfg. Co.
Gas Machinery Co.
Stacey Manufacturing Co., The
United Gas Improvement Co.
Western Gas Construction Co.

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Kompak Company, The
Ruud Mfg. Co.

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**GEROULD'S IMPROVED RETORT CEMENT**
The Old Reliable

A cement of great value for patching retorts, putting on mouthpieces, making up all bench-work joints, lining blast furnaces and cupolas. This cement is mixed ready for use. Economic and thorough in its work. Fully warranted to stick.

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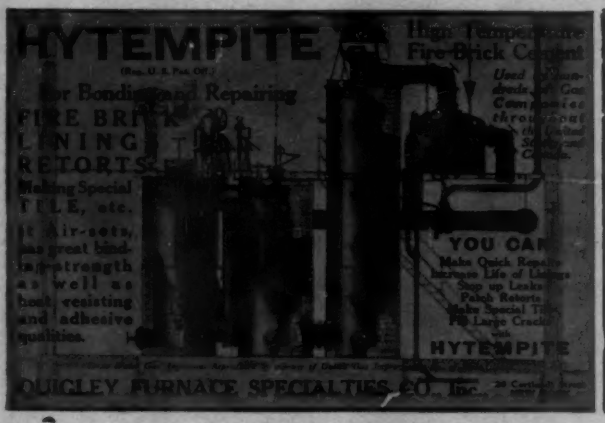


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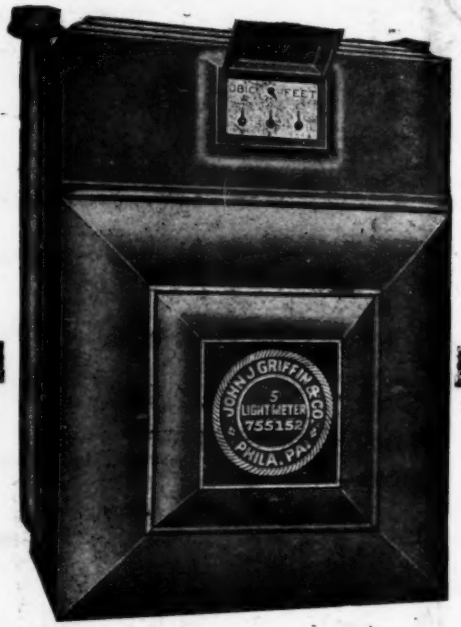


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